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Access Point

Administration Guide

Domibus 4.2.1

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Document Approver(s):

Approver Name	Role
Bogdan DUMITRIU	Project Manager

Document Reviewers:

Reviewer Name	Role
Cosmin BACIU	CEF Technical Leader
Catalin-Emanuel ENACHE	CEF Technical Officer
Ioana DRAGUSANU	CEF Technical Officer
Thomas DUSSART	CEF Technical Officer
Sebastian-Ion TINCU	CEF Technical Officer
Ion PERPEGEL	CEF Technical Officer

Summary of Changes:

Version	Date	Created by	Short Description of Changes
1.07	09/02/2018	Chaouki BERRAH Caroline AEBY	Update for version 3.3.2. MySQL and Oracle deletion scripts added + operational guidelines.
1.08	20/03/2018	Caroline AEBY	Reuse notice added, links to AS4 specifications updated.
1.09	04/04/2018	Chaouki BERRAH Caroline AEBY	Domibus 3.3.3
1.2	16/04/2018	Caroline AEBY	Domibus 3.3.4 PMode configuration moved to other section. Domibus properties: dynamic.discovery => dynamicdiscovery. 2 new properties added: domibus.dynamicdiscovery.partyid.responder.role & domibus.dynamicdiscovery.partyid.type
1.3	21/06/2018	Chaouki BERRAH	Domibus 3.3.4 Updates + binary files sources references updated
1.4	01/07/2018	Caroline AEBY	Updates for Domibus 4.0. Section on Plugin notification added.
1.5	26/07/2018	Chaouki BERRAH Ioana DRAGUSANU Cosmin BACIU Tiago MIGUEL Thomas DUSSART	Update PMODE Multitenancy Test Service and domibus.properties Alerts Section added
1.6	31/07/2018	Cosmin BACIU Caroline AEBY Thomas DUSSART	Updates
1.7	01/08/2018	Catalin ENACHE	Information on WildFly 12 added
1.8	16/08/2018	Cosmin BACIU Caroline AEBY	Additional information on Multitenancy
1.9	23/08/2018	AEBY Caroline Catalin ENACHE	Admin console 4.0 features Database configuration updates
1.9.1	30/08/2018	Joze RIHTARSIC Caroline AEBY	domibus.pmode.dao.implementation removed from Domibus properties.
1.9.2	05/09/2018	Catalin ENACHE	Updates for 4.0 FR
1.9.3	07/09/2018	Cosmin BACIU Caroline AEBY	domibus.datasource.maxLifetime=30 Other changes
1.9.4	10/09/2018	Chaouki BERRAH	Oracle Script Change. Multitenancy Additional Information including domain_name-domibus.properties example and screen shots.

Version	Date	Created by	Short Description of Changes
1.9.5	13/09/2018	Catalin-Emanuel ENACHE Chaouki BERRAH	Update of Wildlfy configuration for Oracle
1.9.6	17/09/2018	Chaouki BERRAH Joze RIHTARSIC Ioana DRAGUSANU	Updates: Set XA Transaction Timeout ..messageIdPattern
1.9.7	17/09/2018	Caroline AEBY	Review
1.9.8	19/09/2018	Catalin-Emanuel ENACHE Chaouki Berrah	UIReplication Chapter added
1.9.9	20/09/2018	Cosmin BACIU	Corrected the retry timeout for the reception awareness configuration; removed the XA Transaction Timeout as it automatically set by the WSLT script
2.0	20/09/2018	Chaouki BERRAH	Alerts configuration example and screenshots
2.1	21/09/2018	Chaouki BERRAH	Weblogic Configuration changes
2.2	26/09/2018	Caroline AEBY	Contact information update
2.3	26/09/2018	Chaouki BERRAH	Prerequisites changes, 21.6 Troubleshooting section
2.4	05/10/2018	Chaouki BERRAH	Weblogic Server Multitenancy details added
2.5	05/10/2018	Caroline AEBY	Troubleshooting article section removed
2.6	08/10/2018	Thomas Dussart	Add missing alert properties
2.7	16/10/2018	Caroline AEBY	Add missing command lines in 16.1.1.2 Oracle
2.7.1	16/10/2018	Thomas Dussart Catalin Enache	Updates for 4.0.1 release Add super user alert information. Updated Multitenancy logging information.
2.7.2	05/11/2018	Catalin Enache	Added information on logging info per domain
2.7.3	21/11/2018	Caroline AEBY	Added missing line for Pull mode in Pmode
2.7.4	22/11/2018	Chaouki BERRAH	domain_name-domibus.dynamicdiscovery.transportprofileas4 Added
2.7.5	29/11/2018	Catalin-Emanuel ENACHE Chaouki BERRAH Caroline AEBY	Weblogic Configuration Updates
2.7.6	05/12/2018	Maarten Daniels Chaouki BERRAH	Updates related to Dynamic Discovery in the PEPPOL Network
2.8	07/12/2018	Ioana DRAGUSANU	TLS configuration chapter updated
2.9	07/01/2019	Chaouki BERRAH	Link to WebLogic Script modified
3.0	11/02/2019	Chaouki BERRAH	Domibus 4.0.2 Release
3.1	11/01/2019	Sebastian-Ion TINCU Chaouki BERRAH	Wildfly 12 Configuration update
3.2	04/02/2019	Catalin Enache Chaouki BERRAH	Set Loggin Levels at Runtime section added
3.3	28/03/2019	Chaouki BERRAH	Wildfly TLS configuration and Tomcat version modified. Wildfly 9 sections removed
3.4	29/03/2019	Chaouki BERRAH	Body payload in Weblogic comments
3.5	05/04/2019	Chaouki BERRAH	-Djava.io.tmpdir=<path to _tmp directory> option added
3.6	17/04/2019	Caroline AEBY Sebastian-Ion TINCU Ioana DRAGUSANU Cosmin BACIU	Wildfly 12 updates + updates based on TO's feedback Default authorization Document Split and Join
3.7	06/05/2019	Caroline AEBY	Removed solved comments
3.8	10/05/2019	Caroline AEBY Ion PERPEGEL	More info on plugin users and users added (security, login, etc.).
3.9	14/05/2019	Caroline AEBY	4.1 => 4.1-RC1
3.10	16/05/2019	Catalin ENACHE	4.1-RC1 updates
3.11	16/05/2019	Thomas DUSSART	Added DSS library documentation

Version	Date	Created by	Short Description of Changes
3.12	03/07/2019	Chaouki BERRAH Sebastian-Ion TINCU	Domibus 4.1 version Weblogic changes: installation for Windows, Weblogic plugins installation, versions prerequisites and .WeblogicCluster.properties Wildfly Cluster Details added
3.13	11/07/2019	Thomas DUSSART	Additional information on pulling setup
3.14	16/07/2019	Catalin COMANICI	Typo's
3.15	17/07/2019	Ioana DRAGUSANU	Chapter Two-way MEP scenario added
3.16	26/07/2019	Thomas DUSSART	Domibus Statistics chapter added
4.0	31/07/2019	Caroline AEBY	Final version for Domibus 4.1
4.1	05/08/2019	Caroline AEBY	DSS chapter reviewed
4.2	09/08/2019	Caroline AEBY	Password syntax constraints, EC login, Weblogic supported version
4.3	09/09/2019	Caroline AEBY	Domibus 4.1.1 release
4.4	10/09/2019	Caroline AEBY	Limit of 28 attachments in a single AS4 message
4.5	25/09/2019	Caroline AEBY Chaouki BERRAH	Oracle and Weblogic version support updated
4.6	30/09/2019	Chaouki BERRAH	Weblogic versions updated
4.7	21/10/2019	Chaouki BERRAH	Domibus URL update
4.8	24/10/2019	Caroline AEBY	Updates for 4.1.2
4.9	05/11/2019	Cosmin Baciu	Password and payload encryption + Oracle 12g => 12c
5.0	18/11/2019	Cosmin Baciu	Chapter on Payload encryption
5.1	21/11/2019	Catalin ENACHE	Domibus properties: Added JMS Queues count metrics and updated UIReplication section
5.2	29/11/2019	Thomas DUSSART	Add DSS TLS properties
5.3	04/12/2019	Chaouki BERRAH	PMode configuration for PEPPOL update
5.4	20/12/2019	Chaouki BERRAH	Self-Sending feature note.
5.5	10/01/2020	Caroline AEBY	Version 4.1.3 + Domibus Admin Console – JMS monitoring page filter
5.6	24/01/2020	Chaouki BERRAH	Extra Grant for MYSQL Jira 6151
5.7	29/01/2020	Chaouki BERRAH	… oasisclient.regexCertificateSubjectValidation Changes
5.8	03/02/2020	Caroline AEBY	Typo's corrected
5.9	04/02/2020	Cosmin BACIU	4.1.3 changes
6.0	26/02/2020	Caroline AEBY	Change in Password Encryption Property
6.1	18/03/2020	Chaouki BERRAH	Edelivery_user changes
6.2	31/03/2020	Chaouki BERRAH	Transaction errors in Weblogic fix added to setDomainEnv.sh/.bat.
6.2.0	14/04/2020	Caroline AEBY	Version created for updates for 4.2 – please use track changes!
6.2.1	16/04/2020	Chaouki BERRAH	domibus.deployment.clustered option added
6.2.2	29/04/2020	Caroline AEBY	Added reference to the Knowledge Base section
6.2.3	07/05/2020	Caroline AEBY	Supported versions for 4.2: Wildfly 18.0.x.Final & Tomcat 9.x + MSQL parameters updated & Wildfly upgrade instructions
6.2.4	25/05/2020	Chaouki BERRAH	JNDI Properties of Weblogic
6.2.5	11/06/2020	Catalin ENACHE	PMode file: maxSize attribute of payload Profile has been re-enabled and for Split & Join the value has been increased
6.2.6	12/06/2020	Chaouki BERRAH	datetime format added.
6.2.7	01/07/2020	Cosmin Baciu	Documented message prioritization
6.2.8	03/07/2020	Catalin Enache	Ehcache files for Plugins
6.2.9	15/07/2020	Chaouki BERRAH	domibus.attachment.storage. / rules added
6.2.10	13/07/2020	Caroline AEBY	Added 7.1.5 Message properties validation (from Domibus 4.1.5)
6.2.11	12/08/2020	Arun Raj Venugopal	Added point 11 in section 4.2.2. Clustered Deployment for cluster transaction affinity
7.0	21/08/2020	Chaouki BERRAH	OpenJDK support added for Tomcat and Wildfly. Wildfly upgraded to version 20.0.1.Final
7.0.1	28/08/2020	Chaouki BERRAH	Duplicate parameters/entities are not allowed Remark added
7.1	09/09/2020	Caroline AEBY	Oracle 19c also supported with Domibus 4.2
7.2	18/09/2020	Caroline AEBY Ioana Dragusanu	Retention policy properties added in Pmode
7.3	21/09/2020	Caroline AEBY	Domibus 4.2 RC release.

Version	Date	Created by	Short Description of Changes
7.4	01/10/2020	Chaouki BERRAH Caroline AEBY Ion Perpegel	Domibus 4.2. RC Domibus properties for default, domain and super user updated
7.5.1	02/10/2020	Thomas DUSSART Caroline AEBY	Updates in DSS extentions section
7.6.1	19/10/2020	Chaouki BERRAH	Oracle Database setup update
7.6.2	26/11/2020	S. AZHIKODE-CHANDRAN Caroline AEBY	Additional Domibus properties
7.7	30/11/2020	Cosmin BACIU Caroline AEBY	Domibus 4.2 review
7.8	08/12/2020	Caroline AEBY Ion PERPEGEL Cosmin BACIU Chaouki BERRAH	Admin console updates Mysql and Oracle scripts name version agnostic
7.9	12/01/2021	Caroline AEBY Cosmin BACIU	Clustered deployment: Domibus.config.location=$SHARED_LOCATION/conf/domibus.
8.0	21/01/2021	Chaouki Berrah	Tenant Domain changes.
8.1	22/02/2021	Chaouki BERRAH	Tomcat Single Server Update. edelivery_path update.
8.2	10/03/2021	Thomas DUSSART Caroline AEBY Ioana Dragusanu	Domibus 4.2.1 version DSS/proxy section update Deletion Strategy and UI page logs properties added. Restrictions on OpenJDK version
8.3	12/02/2021	Caroline AEBY	Note on comment/uncomment properties for Domibus & default values
8.4	12/04/2021	Chaouki BERRAH	Oracle supported version update
8.5	14/04/2021	Caroline AEBY Chaouki BERRAH	Guidance on digital certificates used in eDelivery. Tomcat and multitenancy
8.6	16/04/2021	Caroline AEBY Catalin ENACHE Chaouki BERRAH	Add JMS messages info in Domibus UI JMS section

Table of Contents

1. INTRODUCTION

This Administration Guide is intended for Server Administrators in charge of installing, managing and troubleshooting an eDelivery Access Point.

1.1. Purpose

The purpose of this guide is to provide detailed information on how to deploy and configure Domibus on WebLogic, Tomcat and WildFly with MySQL or Oracle. It also provides detailed descriptions of related Security Configurations (Policies, Certificates), Message Filtering, PMode Configuration, Application Monitoring, Custom Plugins Registration, JMS Monitoring, Data Archiving, Troubleshooting and TLS Configuration.

1.2. References

Ref.	Document	Content outline
[REF1]	https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/Domibus	Location of the release artefacts on the CEF Digital site
[REF2]	https://dev.mysql.com/downloads/connector/j/	Location to download the MySQL JDBC driver from the Official website
[REF3]	http://www.oracle.com/technetwork/database/features/jdbc/default-2280470.html	Location of the Oracle JDBC driver from the Official website
[REF4]	https://docs.wildfly.org/20/High_Availability_Guide.html#Clustering_and_Domain_Setup_Walkthrough	Location to the Official documentation on how to setup a cluster on WildFly 20
[REF5]	https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/PKI+Service	CEF Public Key Infrastructure (PKI) Service Offering Document

Ref.	Document	Content outline
[REF6]	https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/Domibus	Location of the latest Domibus release on the Single Web Portal
[REF7]	https://access.redhat.com/documentation/en-US/Red_Hat_JBoss_Fuse/6.0/html/XML_Configuration_Reference/files/cxf-http-conf-2_7_0_xsd_Element_http-conf_tlsClientParameters.html	RedHat page for the XML Configuration Reference of the *http-conf:tlsClientParameters* element
[REF8]	https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/eDelivery+SMP	SMP (Service Metadata Publisher) and Dynamic Discovery in AS4 Gateways
[REF9]	https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/eDelivery+SMP	Space describing the SMP (Service Metadata Publisher)
[REF10]	https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/eDelivery+AS4	eDelivery AS4 Profile
[REF11]	https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/Domibus	Software Architecture Document (SAD)
[REF12]	https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/Domibus	JMS Plugin Interface Control Document (ICD)
[REF13]	https://ec.europa.eu/cefdigital/wiki/display/CEKB/CEF+eDelivery+Knowledge+Base	CEF eDelivery Knowledge Base containing troubleshooting and How To articles.
[REF14]	https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/Guidance+on+Digital+Certificates	Guidance on digital certificates used in eDelivery.

2. CONVENTIONS

The commands and configuration files listed in this document usually contain a mix of reserved words (commands, instructions and system related special words) and user defined words (chosen by the user) as well as comments and preferred values for certain variables. The conventions used in this document, to distinguish between them, are the followings:

- To keep this document release agnostic as much as possible, the strings "x-y-z" or "x.y.z" are intended to refer to the version of Domibus discussed in this version of the document, in the present case "Domibus 4.2.1".
- **Bold** is used for "reserved" words and commands.
- *Normal italic* together with a short description of the argument is used for user-defined names (chosen by you to designate items like users, passwords, database etc.). Normally contains at least 2 words separated by "_". Could be highlighted at times.
- ***Bold and Italic*** is used for advisable values which can be changed by the user depending on their infrastructure. Could be highlighted at times.
- Comments are sometimes added to describe the purpose of the commands, usually enclosed in brackets ().

By default, non-OS specific paths will be described using Linux patterns.

2.1. Example 1: Sample Oracle Statement

create user *edelivery_user* **identified by** *edelivery_password*;

grant all privileges to *edelivery_user*;

(Where *edelivery_user* and *edelivery_password* are names chosen by the user)

2.2. Example 2: Sample Configuration file

jdbc.datasource.0.driver.name=com.mysql.jdbc.Driver

jdbc.datasource.0.driver.url=jdbc:mysql://*localhost:3306/* *domibus_schema*

jdbc.datasource.0.driver.password=*edelivery_password*

jdbc.datasource.0.driver.username=*edelivery_user*

(Where:

- *edelivery_user, domibus_schema* and *edelivery_password* are names chosen by the user.

- ***localhost:3306*** represents hostname:port parameters of the MySQL database.)

3. PREREQUISITES

Please install the following software on the target system. For further information and installation details, we kindly advise you to refer to the software owner's documentation.

- Oracle Java runtime environment JRE **or** Oracle OpenJDK11:

  - Oracle JRE version 8, for Tomcat, WildFly and WebLogic:
  http://www.oracle.com/technetwork/java/javase/downloads/index.html:

  - Oracle OpenJDK 11 up to version 11.0.9.1+1 for Tomcat and WildFly only, not WebLogic:
  https://openjdk.java.net/projects/jdk/11/

- One of the supported Database Management Systems :
  - MySQL 8 or above
  - Oracle 12c R2 and Oracle 19c (tested version, future versions might work)
- If you don't plan to deploy Domibus according to the Pre-Configured Single Server Deployment method, you must also install one of the supported application/web servers:
  - WebLogic Version 12.2.1.4 (tested version, future versions might also work)
  - WildFly 20.0.x Final (tested version, future versions might also work)
  - Apache Tomcat 9.x (tested version, future versions might also work)
- All Domibus installation resources, including full distributions and documentation can be found on the Single Web Portal :

  https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/Domibus

3.1. Binaries repository

All the artefacts can be directly downloaded from the CEF Digital site (cf.[REF1]).

4. DOMIBUS DEPLOYMENT

Remark:

*The variable **cef_edelivery_path** referring to the folder where the package is installed will be used later in this document.*

4.1. Database Configuration

For this step, you will have to use the following resources (see section §3.1–*"Binaries repository"* for the download location):

- **domibus-distribution-X.Y.Z-sql-scripts.zip**

4.1.1. MySQL configuration

1. Unzip **domibus-distribution-X.Y.Z-sql-scripts.zip** in *cef_edelivery_path***/sql-scripts.**
2. Open a command prompt and navigate to this directory: *cef_edelivery_path***/sql-scripts**.
3. Execute the following MySQL commands at the command prompt :

mysql -h *localhost* -u *root_user* **--password=*root_password* -e "drop schema if exists *domibus_schema*; create schema *domibus_schema*; alter database** *domibus_schema* **charset= utf8mb4 collate= utf8mb4_bin; create user *edelivery_user*@*localhost* identified by '*edelivery_password*'; grant all on** *domibus_schema.** **to** *edelivery_user@localhost*;"

The above script creates a schema (*domibus_schema*) and a user (*edelivery_user*) that have all the privileges on the schema**.**

Only for Mysql 8:

mysql -h *localhost* -u *root_user* **--password=*root_password* -e *"grant xa_recover_admin on *.* to edelivery_user @localhost;*"**

mysql -h *localhost* -u *root_user* **--password=*root_password domibus_schema* < mysqlinnoDb-x.y.z.ddl**

The above script creates the required objects in *domibus_schema.*

mysql -h *localhost* -u *root_user* **--password=*root_password domibus_schema* < mysqlinnoDb-x.y.z-data.ddl**

The above script populates the tables with some predefined data in *domibus_schema*.

Please find below some information regarding the MySQL server configuration:

1. (Optional) Storing payload messages in a database with size over 30 MB.

   Domibus can temporarily store the messages in the database.

   Therefore, it is required to increase the maximum allowed size of packets. Update the default properties of **my.ini** (Windows) or **my.cnf** (Linux).

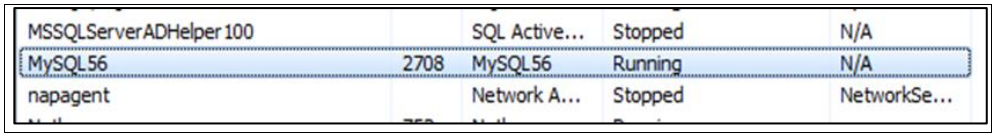
- **max_allowed_packet** property

```
# The maximum size of one packet or any generated or intermediate string, or any
# parameter sent by the
# mysql_stmt_send_long_data() C API function.
max_allowed_packet=512M
```

- **innodb_log_file_size** property

```
# Size of each log file in a log group. You should set the combined size
# of log files to about 25%-100% of your buffer pool size to avoid
# unneeded buffer pool flush activity on log file overwrite. However,# note that larger logfile size will increase the time needed for the recovery process
innodb_log_file_size=5120M
```

- Restart MySQL service (Windows):



MySQL service

2. (Optional) For storing payload messages in a file system instead of a database see §5.2-Domibus Properties*).*

3. For MySQL 8 and Connector/J 8.0.x please set the database timezone. One way of setting the timezone is to modify the MySQL **my.ini** configuration file by adding the following property with the adjusted timezone. It is recommended that the database timezone is the same as the timezone of the machine where Domibus is installed.

```
default-time-zone='+00:00'
```

Remark:

If you are using Windows, make sure to have the parent directory of mysql.exe added to your PATH variable.

4.1.2. Oracle configuration

1. Unzip **domibus-distribution-X.Y.Z-sql-scripts.zip** in *cef_edelivery_path***/sql-scripts**

2. Open a command prompt and navigate to this directory: *cef_edelivery_path***/sql-scripts**.

3. Open a command line session, log in and execute the following commands :

sqlplus sys as sysdba (password should be the one assigned during the Oracle installation)
==========
Once logged in Oracle:
CREATE USER <***edelivery_user***> IDENTIFIED BY <***edelivery_password***>
DEFAULT TABLESPACE <tablespace>
QUOTA UNLIMITED ON <tablespace>;
GRANT CREATE SESSION TO <edelivery_user>;
GRANT CREATE TABLE TO <edelivery_user>;
GRANT CREATE VIEW TO <edelivery_user>;
GRANT CREATE SEQUENCE TO <edelivery_user>;
GRANT CREATE PROCEDURE TO <edelivery_user>;
GRANT EXECUTE ON DBMS_XA TO <edelivery_user>;
GRANT SELECT ON PENDING_TRANS$ TO <edelivery_user>;
GRANT SELECT ON DBA_2PC_PENDING TO <edelivery_user>;
GRANT SELECT ON DBA_PENDING_TRANSACTIONS TO <edelivery_user>;

CONNECT <***edelivery_user***>
SHOW USER; (should return : edelivery_user)
@oracle-x.y.z.ddl
@oracle-x.y.z-data.ddl

EXIT
==========

Remarks:

1. Replace <edelivery_user> and <edelivery_password> with corresponding values.

2. <tablespace> is created and assigned by your DBA; for local/test installations just replace it with user's tablespace. The quota could be limited to a certain size.

3. DDL/SQL scripts must be run with the @ sign from the location of the scripts

4.1.3. MySQL and Oracle Deletion scripts

A deletion script for MySQL and Oracle Domibus DB is available in the **domibus-distribution-X.Y.Z-sql-scripts.zip**.

The purpose of the script is to delete all messages within a user defined period to recover disk space. The script requires a START_DATE parameter and an END_DATE parameter to be set.

The tables affected by the execution of this script are:

- TB_MESSAGING
- TB_ERROR_LOG
- TB_PARTY_ID
- TB_RECEIPT_DATA
- TB_PROPERTY
- TB_PART_INFO
- TB_RAWENVELOPE_LOG
- TB_ERROR
- TB_USER_MESSAGE
- TB_SIGNAL_MESSAGE

- TB_RECEIPT
- TB_MESSAGE_INFO
- TB_MESSAGE_LOG
- TB_MESSAGE_UI

Any information relevant to a message received or sent during the predefined period, will be removed from these tables.

In order to execute this script, it is advised to use a UI tool such as SQL developer or MySQL workbench.

Important: in order to keep the JMS queues synchronized with the DB data that will be deleted by this script, the Domibus Administrator should remove manually the associated JMS messages from the plugin notifications queues

4.2. Domibus on WebLogic

This section does not include the installation of WebLogic server. It is assumed that the WebLogic Server is installed and a Domain is created.
Hereafter the domain location will be referred as *DOMAIN_HOME (user defined name)*.

Remarks:

- *The Apache CXF library referred by Domibus, internally uses the environment variable java.io.tmpdir to buffer large attachments received. If the property java.io.tmpdir is not specified, then by default this points to the <Weblogic_domain_directory>. It is recommended to point this to a local directory '_tmp' on each managed server and accessible by the WebLogic application server. The disk space allocated for '_tmp' directory would depend on the size of attachments received. On production environment it is recommended to provide 100GB for '_tmp'.*

- *CXF has a limitation of being able to validate signatures of only 28 payload attachments at a time. As a result, Domibus cannot send/receive more than 28 attachments in a single AS4 message.*

- *User can modify default JNDI name property in the **domibus.properties** by setting:*
  - *#Weblogic JDBC-DataSource JNDI Name*
  - *domibus.jdbc.datasource.jndi.name=jdbc/cipaeDeliveryDs*
  - *#Weblogic JDBC-DataSource Quartz JNDI Name*
  - *domibus.jdbc.datasource.quartz.jndi.name=jdbc/cipaeDeliveryNonXADs*

4.2.1. Single Server Deployment

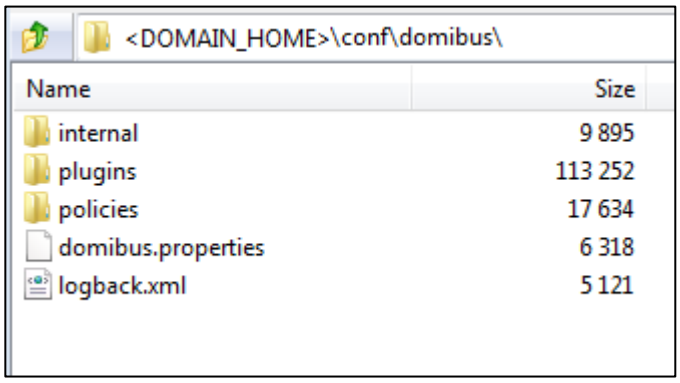
For this step, you will have to use the following resources (see section §3.1–"*Binaries repository* " for the download location):

- **domibus-distribution-X.Y.Z-weblogic-war.zip**
- **domibus-distribution-X.Y.Z-weblogic-configuration.zip**

At least one of the following plugins should be downloaded and installed:
- **domibus-distribution-X.Y.Z-default-ws-plugin.zip**
- **domibus-distribution-X.Y.Z-default-jms-plugin.zip**

- **domibus-distribution-X.Y.Z-default-fs-plugin.zip**

1. Download and unzip **domibus-distribution- X.Y.Z-weblogic-configuration.zip** in the directory *DOMAIN_HOME***/conf/domibus**



2. Download and unzip **domibus-distribution- X.Y.Z-weblogic-war.zip** in a temporary folder to prepare it for deployment.

3. Configure your Keystore based on section §5.1.2 – *"Certificates"*

4. Add the following lines in:

   - For Windows : *DOMAIN_HOME***\bin\setDomainEnv.cmd**

     - Locate the **set DOMAIN_HOME** statement and add the following lines after:

```
…
set DOMAIN_HOME
# Added for Domibus
*****************************************************************
set EXTRA_JAVA_PROPERTIES=%EXTRA_JAVA_PROPERTIES% -
Ddomibus.config.location=%DOMAIN_HOME%/conf/domibus -Djava.io.tmpdir=<path to _tmp
directory>
#
set JAVA_OPTIONS=%JAVA_OPTIONS% -
Dweblogic.transaction.allowOverrideSetRollbackReason=true
#
*****************************************************************************
****
…
```

   - For Linux : *DOMAIN_HOME***/bin/setDomainEnv.sh**

     - Locate the **export DOMAIN_HOME** statement and add the following lines after:

```
…
export DOMAIN_HOME
# Added for Domibus
*****************************************************************
EXTRA_JAVA_PROPERTIES="$EXTRA_JAVA_PROPERTIES -
Ddomibus.config.location=$DOMAIN_HOME/conf/domibus -Djava.io.tmpdir=<path to _tmp
directory>"
```

```
export EXTRA_JAVA_PROPERTIES
#
********************************************************************************
****
JAVA_OPTIONS="${JAVA_OPTIONS} -Dweblogic.transaction.allowOverrideSetRollbackReason=true”
export JAVA_OPTIONS
…
```

5. Run the WebLogic Scripting Tool (WLST) in order to create the JMS resources and the Database datasources from the command line:

   - Download the WSLT Package from following location: https://ec.europa.eu/cefdigital/artifact/content/repositories/public/eu/europa/ec/digit/ipcis/wslt-api/1.9.1/wslt-api-1.9.1.zip

   - Configure the WSLT API tool

     - Unzip the **wslt-api-1.9.1.zip**

     - Define the **WL_HOME** as a system environment variable to point to the WebLogic ‘wlserver’ directory as defined in the **DOMAIN_HOME/bin/setDomainEnv.[cmd|sh]**

       e.g. WL_HOME=/wls12130/wlserver

   - Take the script **WeblogicSingleServer.properties** from **domibus-distribution-X.Y.Z-weblogic-configuration.zip** under the scripts directory and copy the **WeblogicSingleServer.properties** file into the **wslt-api-1.9.1** directory and adapt the following properties :

     - Adapt the properties for connecting to the WebLogic domain:

```
domain.loading.type=connect
domain.connect.url=t3://localhost:7001
domain.connect.username=weblogic_name
domain.connect.password=weblogic_password
domain.name=my_domain1
```

     - Adapt the jdbc.datasource properties for the datasources:

       - Common to Oracle and MySQL

```
################################################################
## Domain configuration
################################################################
## Variables
##---------Cross module--------
#Domibus application module target
application.module.target = AdminServer

##---------JMS configuration--------
#Domibus JMS application server name
jms.server.name = eDeliveryJMS
#Domibus JMS application module name
```

```
jms.module.name = eDeliveryModule
#Domibus JMS file store name
jms.server.store = eDeliveryFileStore
#Domibus JMS application module group
jms.queue.subdeployment.name = eDeliverySubD

##---------Database configuration--------
#Domibus database url
jdbc.datasource.driver.url=jdbc:oracle:thin:@127.0.0.1:1521:xe
#Domibus database user name
jdbc.datasource.driver.username=your_username
#Domibus database user password
jdbc.datasource.driver.password=your_password
```

- For Oracle database:

```
jdbc.datasource.0.name=eDeliveryDs
jdbc.datasource.0.targets=${application.module.target}
jdbc.datasource.0.jndi.name=jdbc/cipaeDeliveryDs
jdbc.datasource.0.pool.capacity.max=50
jdbc.datasource.0.pool.connection.test.onreserv.enable=true
jdbc.datasource.0.pool.connection.test.onreserv.sql=SQL SELECT 1 FROM DUAL
jdbc.datasource.0.driver.name=oracle.jdbc.xa.client.OracleXADataSource
jdbc.datasource.0.driver.url=${jdbc.datasource.driver.url}
jdbc.datasource.0.driver.password=${jdbc.datasource.driver.password}
jdbc.datasource.0.driver.username=${jdbc.datasource.driver.username}
jdbc.datasource.0.driver.properties.items=0
jdbc.datasource.0.xa.transaction.timeout.branch=true

jdbc.datasource.1.name=edeliveryNonXA
jdbc.datasource.1.targets=${application.module.target}
jdbc.datasource.1.jndi.name=jdbc/cipaeDeliveryNonXADs
jdbc.datasource.1.transaction.protocol=None
jdbc.datasource.1.pool.capacity.max=50
jdbc.datasource.1.pool.connection.test.onreserv.enable=true
jdbc.datasource.1.pool.connection.test.onreserv.sql=SQL SELECT 1 FROM DUAL
jdbc.datasource.1.driver.name=oracle.jdbc.OracleDriver
jdbc.datasource.1.driver.url=${jdbc.datasource.driver.url}
jdbc.datasource.1.driver.password=${jdbc.datasource.driver.password}
jdbc.datasource.1.driver.username=${jdbc.datasource.driver.username}
jdbc.datasource.1.driver.properties.items=0
```

Remark:

MySQL configuration is commented by default. To enable MySQL, remove the comment (#) from the lines below. Don't forget to add the comment (#) for Oracle to disable it.

- For MySQL:

```
#jdbc.datasource.0.name=eDeliveryDs
#jdbc.datasource.0.targets=${application.module.target}
#jdbc.datasource.0.jndi.name=jdbc/cipaeDeliveryDs
#jdbc.datasource.0.transaction.protocol=LoggingLastResource
#jdbc.datasource.0.pool.connection.test.onreserv.enable=true
```

```
#jdbc.datasource.0.pool.connection.test.onreserv.sql=SQL SELECT 1
#jdbc.datasource.0.driver.name=com.mysql.jdbc.Driver
#jdbc.datasource.0.driver.url=${jdbc.datasource.driver.url}
#jdbc.datasource.0.driver.password=${jdbc.datasource.driver.password}
#jdbc.datasource.0.driver.username=${jdbc.datasource.driver.username}
#jdbc.datasource.0.driver.properties.items=0

#jdbc.datasource.1.name=edeliveryNonXA
#jdbc.datasource.1.targets=${application.module.target}
#jdbc.datasource.1.jndi.name=jdbc/cipaeDeliveryNonXADs
#jdbc.datasource.1.transaction.protocol=None
#jdbc.datasource.1.pool.capacity.max=50
#jdbc.datasource.1.pool.connection.test.onreserv.enable=true
#jdbc.datasource.1.pool.connection.test.onreserv.sql=SQL SELECT 1
#jdbc.datasource.1.driver.name=com.mysql.jdbc.Driver
#jdbc.datasource.1.driver.url=${jdbc.datasource.driver.url}
#jdbc.datasource.1.driver.password=${jdbc.datasource.driver.password}
#jdbc.datasource.1.driver.username=${jdbc.datasource.driver.username}
#jdbc.datasource.1.driver.properties.items=0
```

- Adapt the property for location of the filestore **persistent.filestore.0.location**.

  Example:

```
persistent.filestore.0.location=DOMAIN_HOME/filestore
```

Remark:

Make sure that the path for the filestore contains forward slashes (/).

- Adapt if necessary the JMX security configuration:

  Example:

```
#################################################################
## Policy configuration
#################################################################
security.policies.0.mode = CREATE
security.policies.0.resource = type=<jmx>, operation=invoke, application=,
mbeanType=weblogic.management.runtime.JMSDestinationRuntimeMBean
security.policies.0.realm = myrealm
security.policies.0.authorizer = XACMLAuthorizer
security.policies.0.expression= Rol(Admin)|Grp(Administrators)|Grp(JMSManagers)
security.policies.items = 1
#################################################################
## Users configuration
#################################################################
security.users.0.realm=myrealm
security.users.0.name=jmsManager
security.users.0.password=jms_Manager1
security.users.0.comment=
security.users.0.authenticator=DefaultAuthenticator
security.users.items=1
#################################################################
## Groups configuration
#################################################################
```

security.groups.0.realm=*myrealm*
security.groups.0.name=*JMSManagers*
security.groups.0.description=
security.groups.0.authenticator=*DefaultAuthenticator*
security.groups.items=1
##
Groups Membership configuration
##
security.group.member.0.user=*jmsManager*
security.group.member.0.groups=*JMSManagers*
security.group.member.0.realm=*myrealm*
security.group.member.0.authenticator=*DefaultAuthenticator*
security.group.member.items=1

- Start the WebLogic domain from within *DOMAIN_HOME:*
  - For Windows:

startWebLogic.cmd

  - For Linux:

startWebLogic.sh

- Execute the following command from within the **wlstapi-1.9.1/bin** directory:
  - For Windows:

wlstapi.cmd ../scripts/import.py --property ../WeblogicSingleServer.properties

  - For Linux:

wlstapi.sh ../scripts/import.py --property ../WeblogicSingleServer.properties

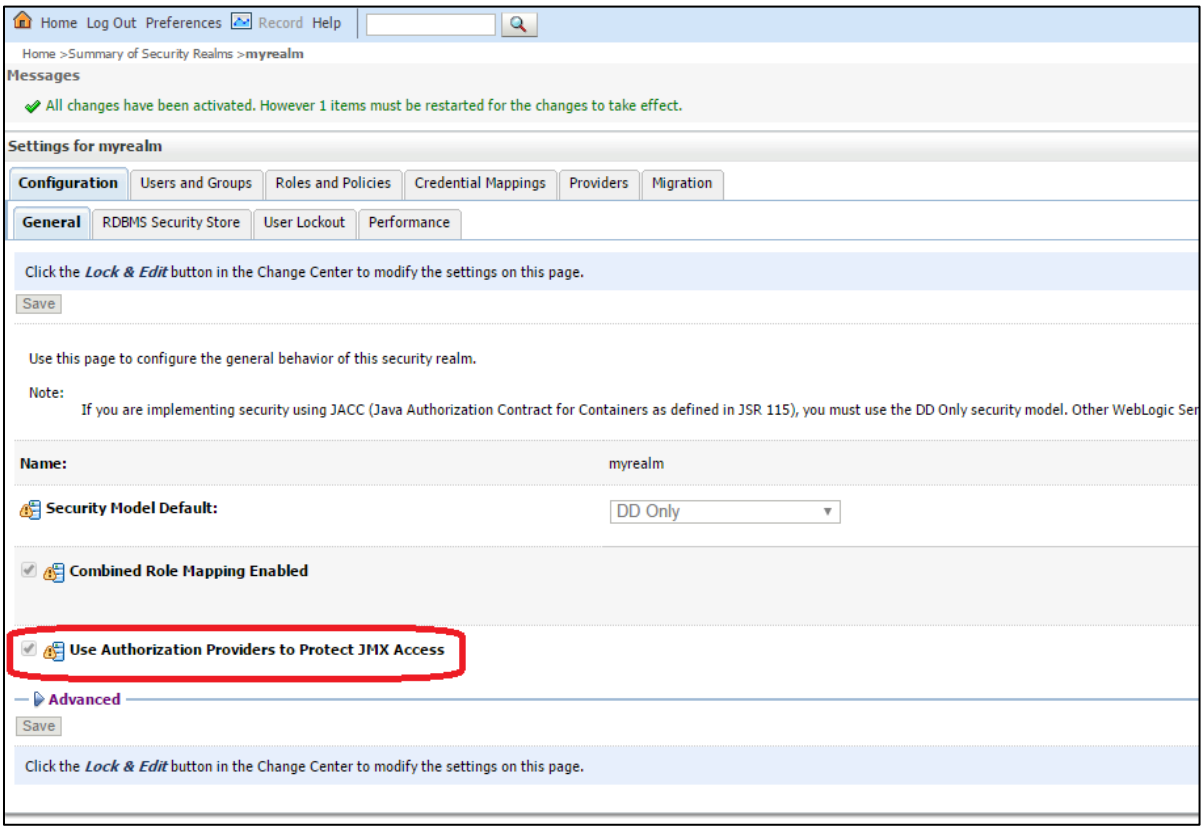
REMARK:
In order to send messages containing bodyload payloads, you must ensure the WebLogic server is started with the following extra parameter:
-
Dorg.apache.cxf.binding.soap.messageFactoryClassName=com.sun.xml.internal.messaging.saaj.soap.ver1_2.SOAPMessageFactory1_2Impl

Expected result:

```
Saving all your changes ...
Saved all your changes successfully.
Activating all your changes, this may take a while ...
The edit lock associated with this edit session is released
once the activation is completed.
Activation completed
Location changed to serverRuntime tree. This is a read-only tree with DomainMBean as the root.
For more help, use help('domainConfig')

Disconnected from weblogic server: AdminServer
```

6. Activate the use of the authorization providers to protect the JMX access:



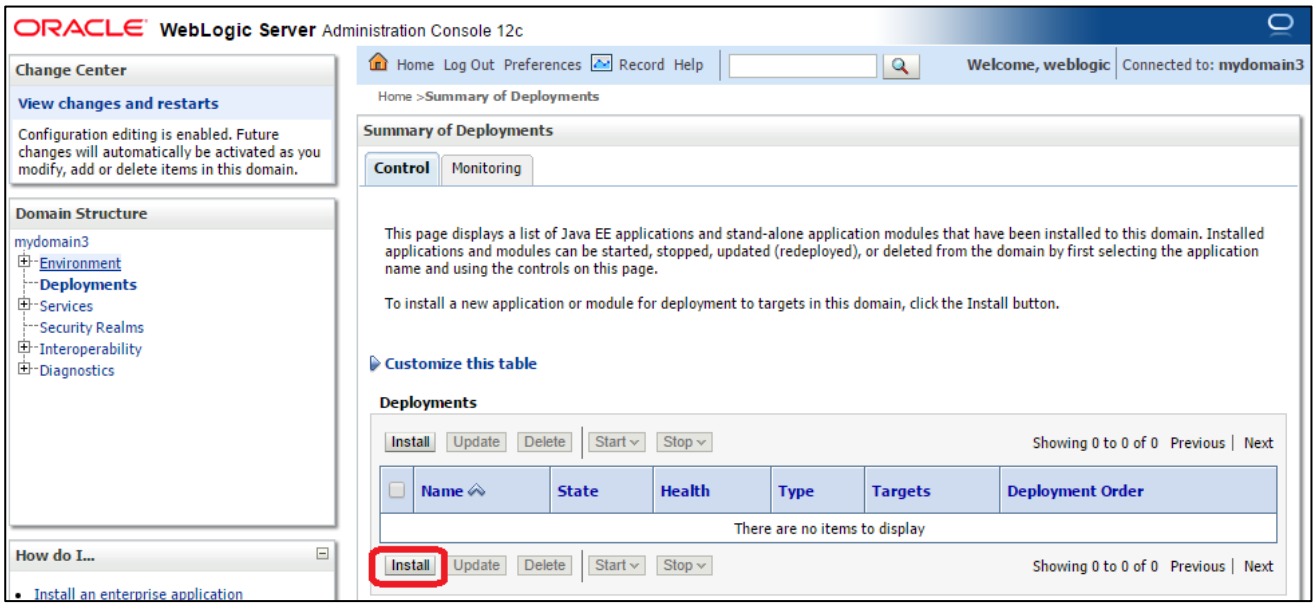
7. The database dialect is pre-configured to use the Oracle database. If you are using a MySQL database, you should adapt the following properties in *<DOMAIN_HOME>***/conf/domibus/domibus.properties** as highlighted in the example below:

```
# ------------------------------ EntityManagerFactory ----------------------
domibus.entityManagerFactory.jpaProperty.hibernate.connection.driver_class=
com.mysql.jdbc.jdbc2.optional.MysqlXADataSource
domibus.entityManagerFactory.jpaProperty.hibernate.dialect=org.hibernate.dialect.MySQLInnoDBDialect
```

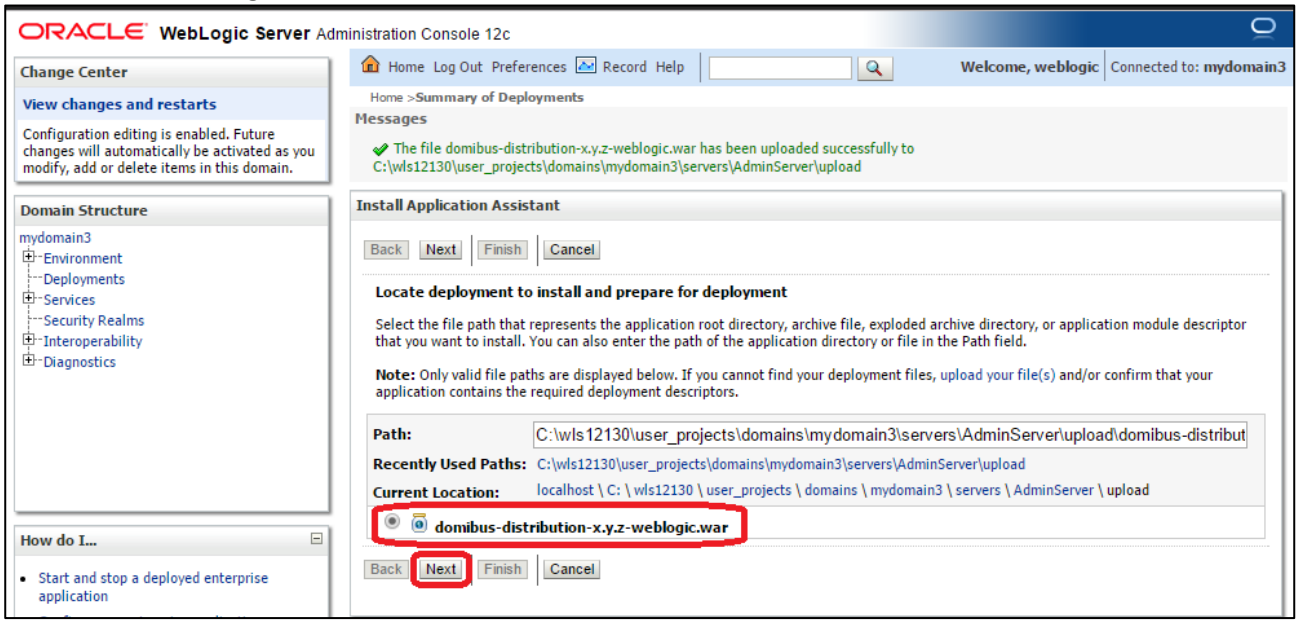
8. Install the WS Plugin. For more details, see section §6.2.1.2 – *"WebLogic"*.

9. Deploy **domibus-distribution-X.Y.Z-weblogic.war**

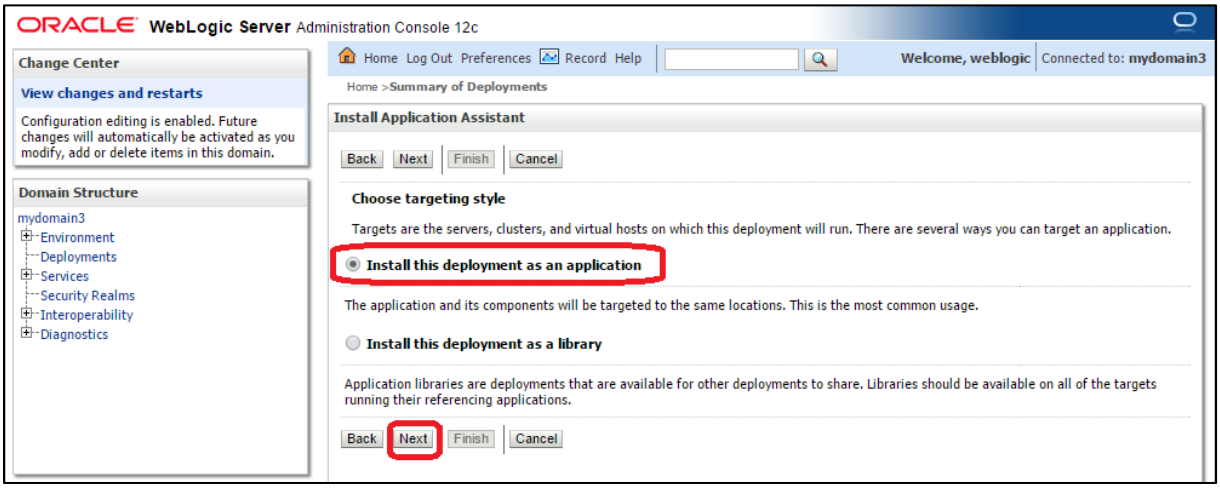
    - Click on **Install**:



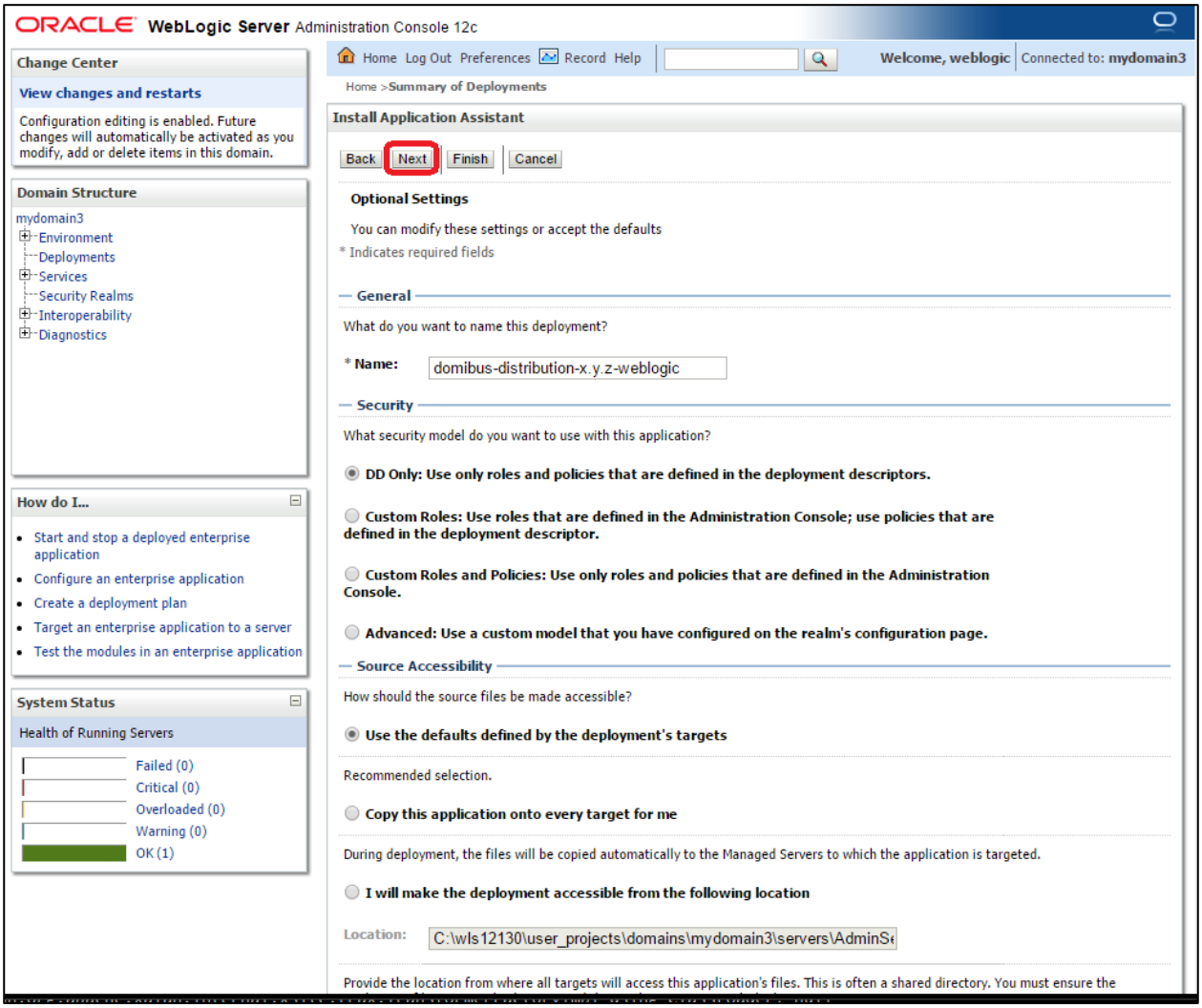
- Navigate to the location of the **.war** file and click **Next**:



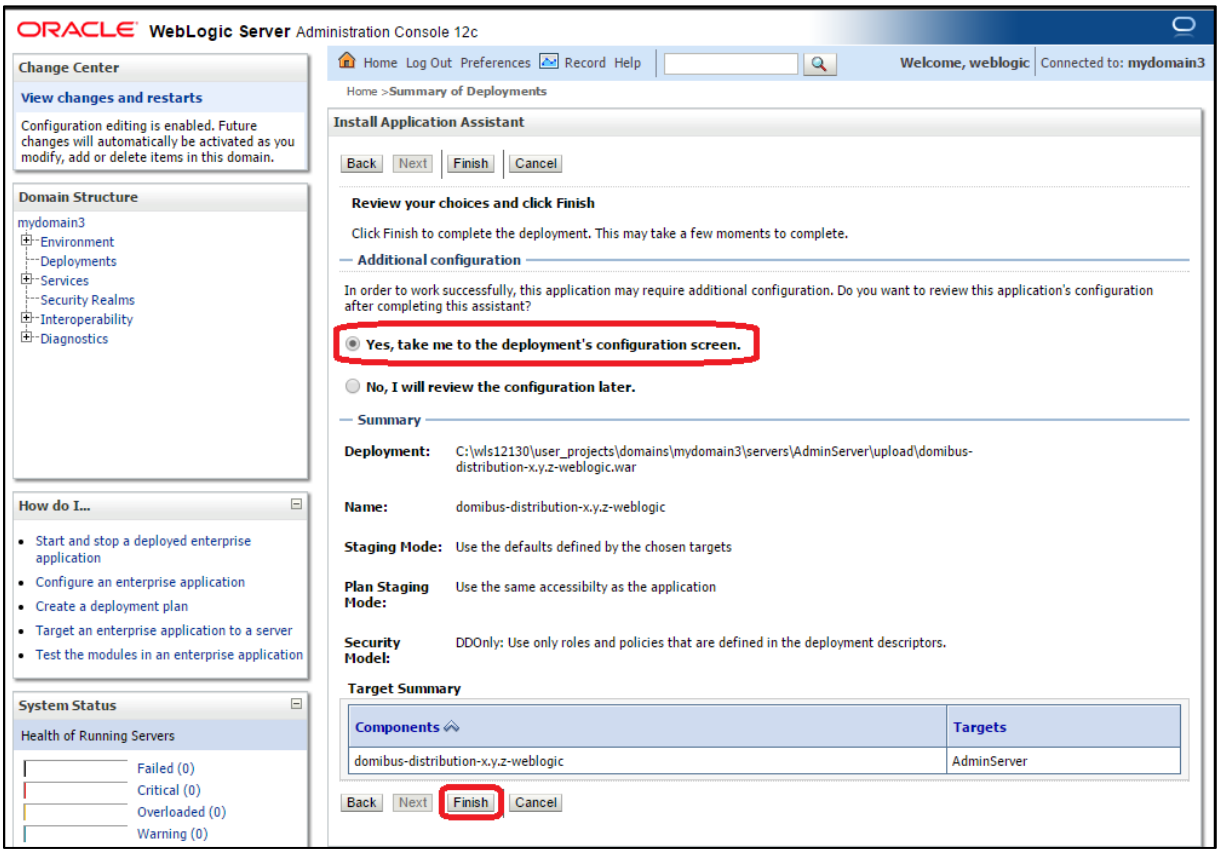
- Choose **Install this deployment as an application** and click **Next**:



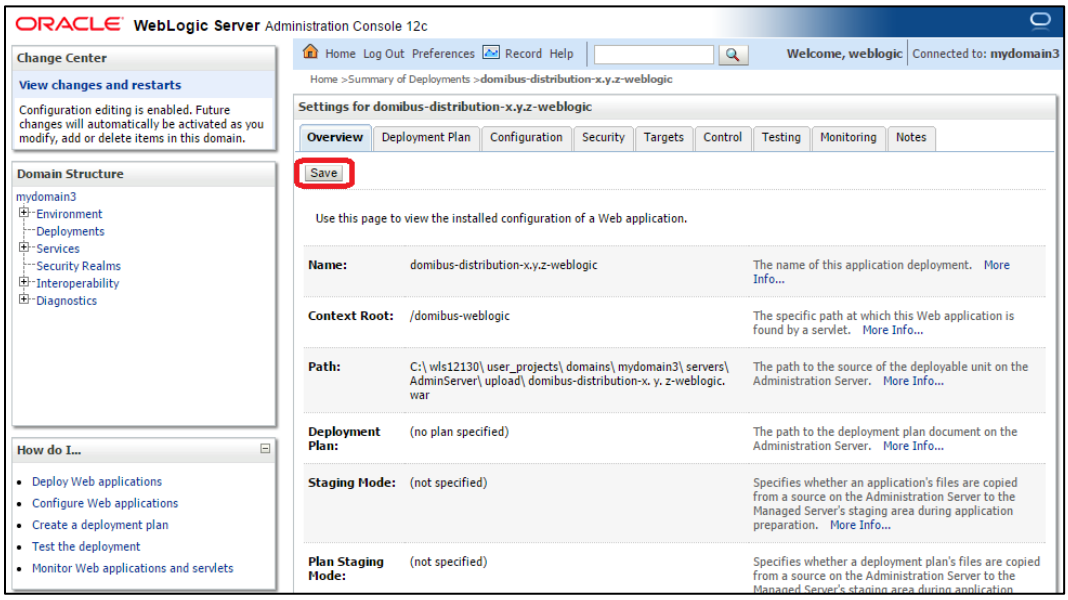
- Accept the default options and click **Next**:



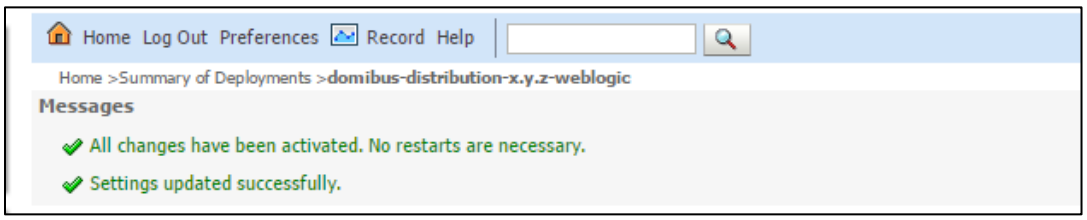
- Select the following option and click **Finish**:



- Here is an overview of the resulting settings, you can now click on the **Save** button:



The expected positive response to the deployment request should be the following:



10. Verify the installation by navigating with your browser to http://*localhost*:*7001*/domibus: if you can access the page it means the deployment was successful.

    (By default: User = ***admin***; Password = ***123456)***

    Remark*:*

    It is recommended to change the passwords for the default users (See §10.1 – Administration for further information).

Expected result:

4.2.2. Clustered Deployment

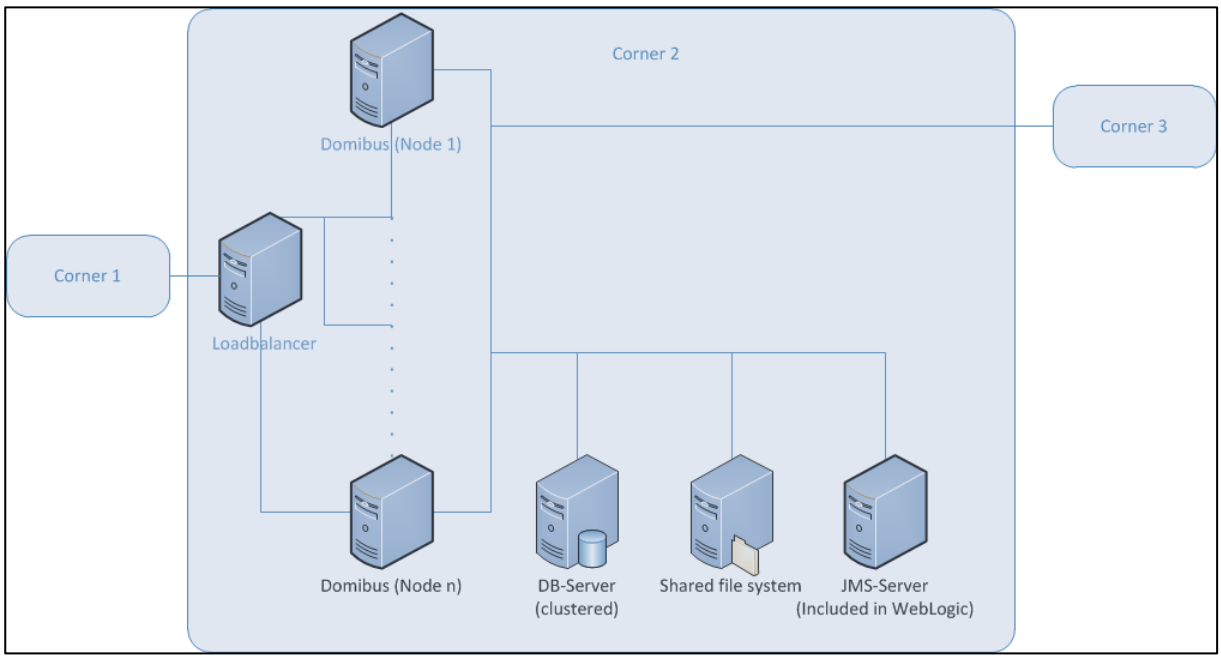


Figure 1 - Diagram representing the Deployment of Domibus in a Cluster on WebLogic

Remark:

In this section, we assume that a Domain and a WebLogic Cluster are already setup.

For this step, you will have to use the following resources (see section §3.1–*"Binaries repository"* for the download location):

- **domibus-distribution-X.Y.Z-weblogic-war.zip**
- **domibus-distribution-X.Y.Z-weblogic-configuration.zip**

At least one of the following plugins should be downloaded and installed:

- **domibus-distribution-X.Y.Z-default-ws-plugin.zip**
- **domibus-distribution-X.Y.Z-default-jms-plugin.zip**
- **domibus-distribution-X.Y.Z-default-fs-plugin.zip**

1. Download and unzip **domibus-distribution- X.Y.Z-weblogic-configuration.zip** in in a shared location that is accessible by all the nodes from the cluster. We will refer to this directory as *cef_shared_edelivery_path*.

2. Download and unzip **domibus-distribution- X.Y.Z-weblogic-war.zip** in a temporary folder to prepare it for deployment.

3. Configure your Keystore based on section §5.1.2 – *"Certificates"*.

4. Add the following lines in:

    - For Windows : *DOMAIN_HOME***\bin\setDomainEnv.cmd**

        - Locate the **set DOMAIN_HOME** statement and add the following lines after:

```
…
set DOMAIN_HOME
# Added for Domibus
****************************************************************
set EXTRA_JAVA_PROPERTIES=%EXTRA_JAVA_PROPERTIES% -
Ddomibus.config.location=%SHARED_LOCATION%/conf/Domibus -Djava.io.tmpdir=<path to _tmp
directory>
#
********************************************************************************
****
set JAVA_OPTIONS=%JAVA_OPTIONS% -
Dweblogic.transaction.allowOverrideSetRollbackReason=true
…
```

Remark: SHARED_LOCATION is the shared location where Domibus configuration is found for a clustered installation.

    - For Linux : *DOMAIN_HOME***/bin/setDomainEnv.sh**

        - Locate the **export DOMAIN_HOME** statement and add the following lines after:

```
…
export DOMAIN_HOME
# Added for Domibus
****************************************************************
EXTRA_JAVA_PROPERTIES="$EXTRA_JAVA_PROPERTIES -
Ddomibus.config.location=$SHARED_LOCATION/conf/domibus -Djava.io.tmpdir=<path to _tmp
directory>"
export EXTRA_JAVA_PROPERTIES
```

```
#
*********************************************************************************
****
JAVA_OPTIONS="${JAVA_OPTIONS} -Dweblogic.transaction.allowOverrideSetRollbackReason=true”
export JAVA_OPTIONS
…
```

Remark: SHARED_LOCATION is the shared location where Domibus configuration is found for a clustered installation.

5. Run the WebLogic Scripting Tool (WLST) in order to create the necessary JMS resources and Database datasources from the command line:

   - Download the WLST Package from the following location: https://ec.europa.eu/cefdigital/artifact/content/repositories/eDelivery/eu/europa/ec/digit/ipcis/wslt-api/1.9.1/wslt-api-1.9.1.zip

   - Configure the WSLT API tool:

     - Unzip the **wslt-api-1.9.1.zip**

     - Define the WL_HOME (SET or export command depending on your operating system) environment variable to point to the WebLogic **wlserver** directory

       e.g. WL_HOME=/wls12130/wlserver

   - Take the script **WeblogicCluster.properties** from **domibus-distribution-X.Y.Z-weblogic-configuration.zip** under the scripts directory and copy the **WeblogicCluster.properties** file into the **wslt-api-1.9.1** directory and apply the following changes :

     - Adapt the properties for connecting to the WebLogic domain

       Common to Oracle and MySQL

```
#################################################################
## Domain configuration
#################################################################
## Variables
##---------Cross module--------
#Domibus application module target
application.module.target= cluster_name


##---------JMS configuration--------
#Domibus JMS application server name
jms.server.name = eDeliveryJMS
#Domibus JMS application module name
jms.module.name=eDeliveryModule
#Domibus JMS file store name
```

```
jms.server.store=eDeliveryFileStore
#Domibus JMS application module group
jms.queue.subdeployment.name=eDeliverySubD

##---------Database configuration--------
#Domibus database url

jdbc.datasource.driver.url= jdbc:oracle:thin:@127.0.0.1:1521:xe
#Domibus database user name
jdbc.datasource.driver.username= your_username
#Domibus database user password
jdbc.datasource.driver.password= your_password
```

For Oracle database:

```
#################################################################
## JDBC datasource Server [eDeliveryDs]
#################################################################
# Oracle configuration
jdbc.datasource.0.name=eDeliveryDs
jdbc.datasource.0.targets=${application.module.target}
jdbc.datasource.0.jndi.name=jdbc/cipaeDeliveryDs
jdbc.datasource.0.pool.capacity.max=50
jdbc.datasource.0.pool.connection.test.onreserv.enable=true
jdbc.datasource.0.pool.connection.test.onreserv.sql=SQL SELECT 1 FROM DUAL
jdbc.datasource.0.driver.name=oracle.jdbc.xa.client.OracleXADataSource
jdbc.datasource.0.driver.url=${jdbc.datasource.driver.url}
jdbc.datasource.0.driver.password=${jdbc.datasource.driver.password}
jdbc.datasource.0.driver.username=${jdbc.datasource.driver.username}
jdbc.datasource.0.driver.properties.items=0
jdbc.datasource.0.xa.transaction.timeout.branch=true

#################################################################
## JDBC datasource Server [edeliveryNonXA]
#################################################################
# Oracle configuration
jdbc.datasource.1.name=edeliveryNonXA
```

```
jdbc.datasource.1.targets=${application.module.target}
jdbc.datasource.1.jndi.name=jdbc/cipaeDeliveryNonXADs
jdbc.datasource.1.transaction.protocol=None
jdbc.datasource.1.pool.capacity.max=50
jdbc.datasource.1.pool.connection.test.onreserv.enable=true
jdbc.datasource.1.pool.connection.test.onreserv.sql=SQL SELECT 1 FROM DUAL
jdbc.datasource.1.driver.name=oracle.jdbc.OracleDriver
jdbc.datasource.1.driver.url=${jdbc.datasource.driver.url}
jdbc.datasource.1.driver.password=${jdbc.datasource.driver.password}
jdbc.datasource.1.driver.username=${jdbc.datasource.driver.username}
jdbc.datasource.1.driver.properties.items=0
```

Remark:

MySQL configuration is commented out by default. To enable MySQL, remove the comment (#) from the lines below. Don't forget to add the comment (#) for Oracle to disable it.

For MySQL:

```
################################################################
## JDBC datasource Server [eDeliveryDs]
################################################################



# MySQL configuration
jdbc.datasource.0.name=eDeliveryDs
jdbc.datasource.0.targets=${application.module.target}
jdbc.datasource.0.jndi.name=jdbc/cipaeDeliveryDs
jdbc.datasource.0.pool.capacity.max=50
jdbc.datasource.0.transaction.protocol=LoggingLastResource
jdbc.datasource.0.pool.connection.test.onreserv.enable=true
jdbc.datasource.0.pool.connection.test.onreserv.sql=SQL SELECT 1
jdbc.datasource.0.driver.name=com.mysql.jdbc.Driver
jdbc.datasource.0.driver.url=${jdbc.datasource.driver.url}
jdbc.datasource.0.driver.password=${jdbc.datasource.driver.password}
jdbc.datasource.0.driver.username=${jdbc.datasource.driver.username}
jdbc.datasource.0.driver.properties.items=0
# MySQL configuration
jdbc.datasource.1.name=edeliveryNonXA
jdbc.datasource.1.targets=${application.module.target}
```

```
jdbc.datasource.1.jndi.name=jdbc/cipaeDeliveryNonXADs
jdbc.datasource.1.transaction.protocol=None
jdbc.datasource.1.pool.capacity.max=50
jdbc.datasource.1.pool.connection.test.onreserv.enable=true
jdbc.datasource.1.pool.connection.test.onreserv.sql=SQL SELECT 1
jdbc.datasource.1.driver.name=com.mysql.jdbc.Driver
jdbc.datasource.1.driver.url=${jdbc.datasource.driver.url}
jdbc.datasource.1.driver.password=${jdbc.datasource.driver.password}
jdbc.datasource.1.driver.username=${jdbc.datasource.driver.username}
jdbc.datasource.1.driver.properties.items=0
```

Adapt the property for location of the filestore

persistent.filestore.0.location.

Example:

```
persistent.filestore.0.location=DOMAIN_HOME/filestore
```

Remark:

Make sure that the path for the filestore contains forward slashes (/).

Adapt if necessary the JMX security configuration.

```
jms.module.0.targets=cluster_name
```

Set the domibus.deployment.clustered option to true:

```
domibus.deployment.clustered=true
```

- Start the WebLogic domain from within *DOMAIN_HOME:*
  - For Windows:

```
startWebLogic.cmd
```

  - For Linux:

```
startWebLogic.sh
```

- Execute the following command from within the **wlstapi-1.9.1/bin** directory:

  For Windows:

```
wlstapi.cmd ../scripts/import.py --property ../WeblogicCluster.properties
```

  For Linux:

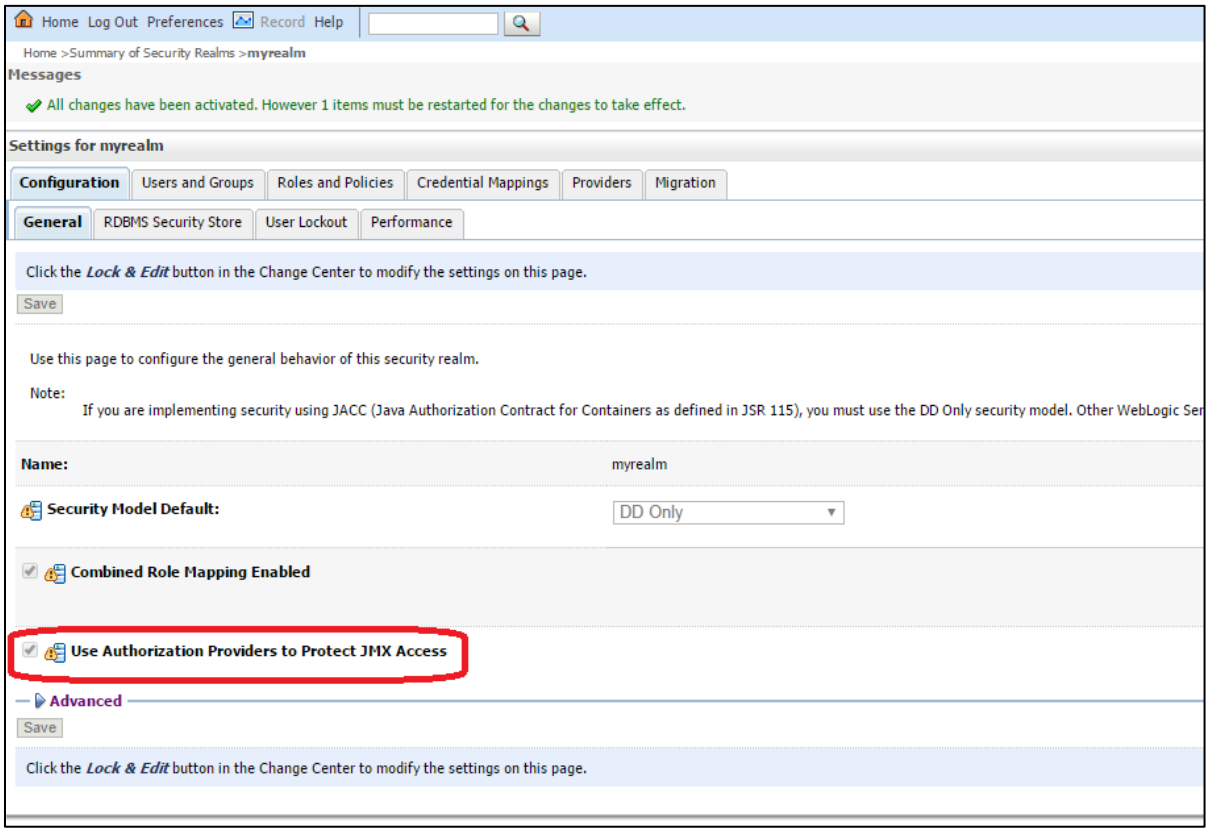
```
wlstapi.sh ../scripts/import.py --property ../WeblogicCluster.properties
```

Expected result:

```
Saving all your changes ...
Saved all your changes successfully.
Activating all your changes, this may take a while ...
The edit lock associated with this edit session is released
once the activation is completed.
Activation completed
Location changed to serverRuntime tree. This is a read-only tree with DomainMBean as the root.
For more help, use help('domainConfig')

Disconnected from weblogic server: AdminServer
```

6. Activate the use of the authorization providers to protect the JMX access:



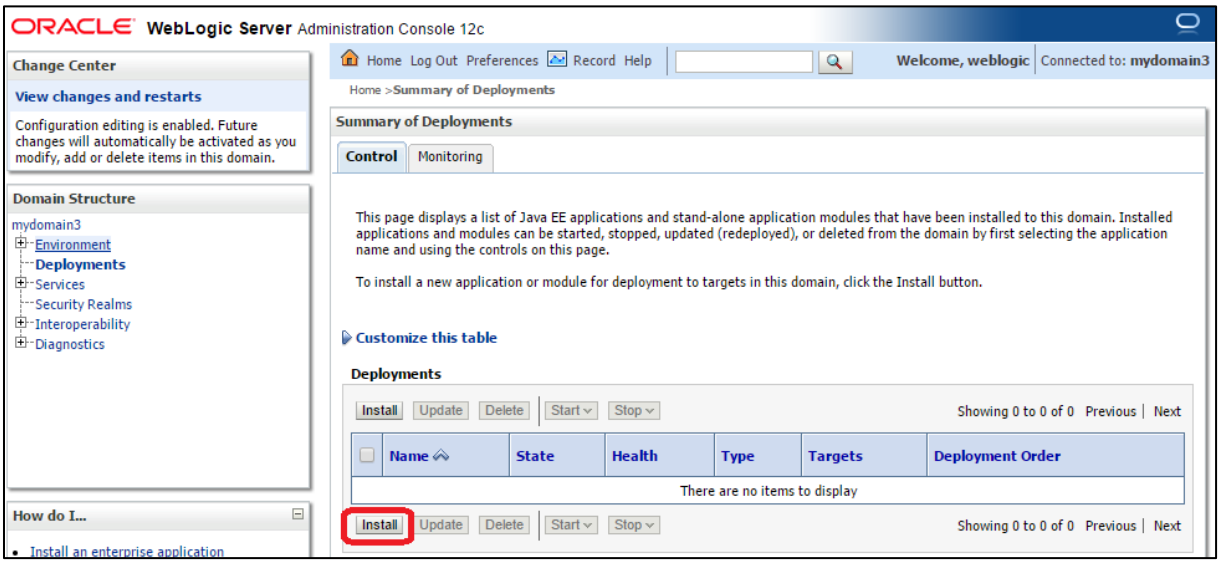
7. The database dialect is pre-configured to use the Oracle database. If you are using the MySQL database you should adapt the dialect as highlighted in the text below in <*DOMAIN_HOME*>**/conf/domibus/domibus.properties** file :

```
#EntityManagerFactory
domibus.entityManagerFactory.jpaProperty.hibernate.connection.driver_class=
com.mysql.jdbc.jdbc2.optional.MysqlXADataSource
domibus.entityManagerFactory.jpaProperty.hibernate.dialect=org.hibernate.dialect.MySQLInnoDBDialect
```

8. Install the WS plugin. For more details, refer to chapter §6.2.1.2 – *"WebLogic"*.

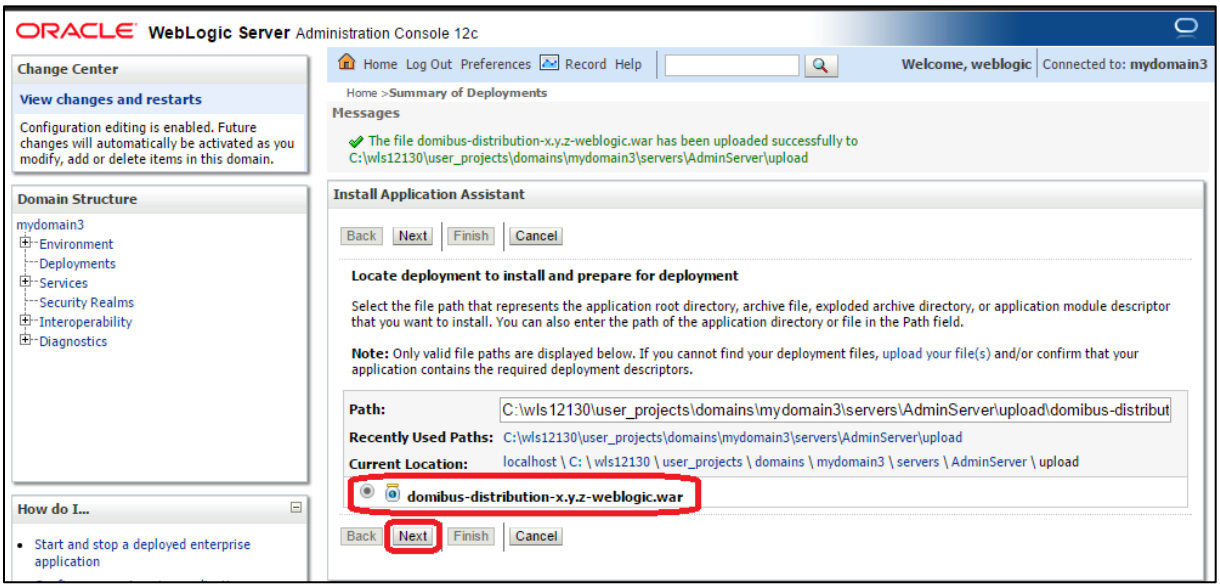
9. Deploy **domibus-distribution-X.Y.Z-weblogic.war**.

- Click **Install**

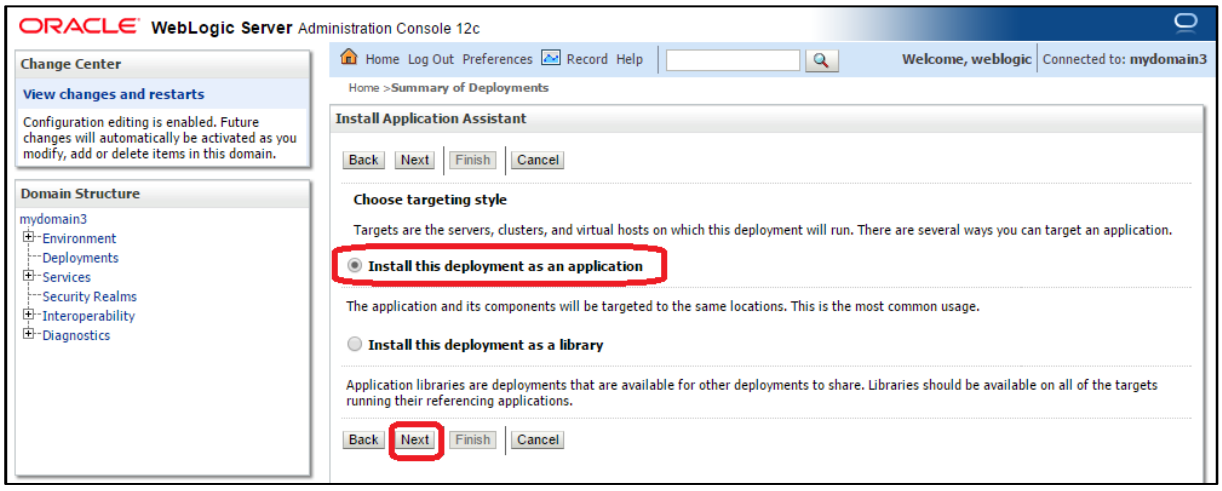


- Navigate to location DOMAIN_HOME**/conf/domibus** where the **domibus-distribution-X.Y.Z-weblogic.war** file has been previously copied.

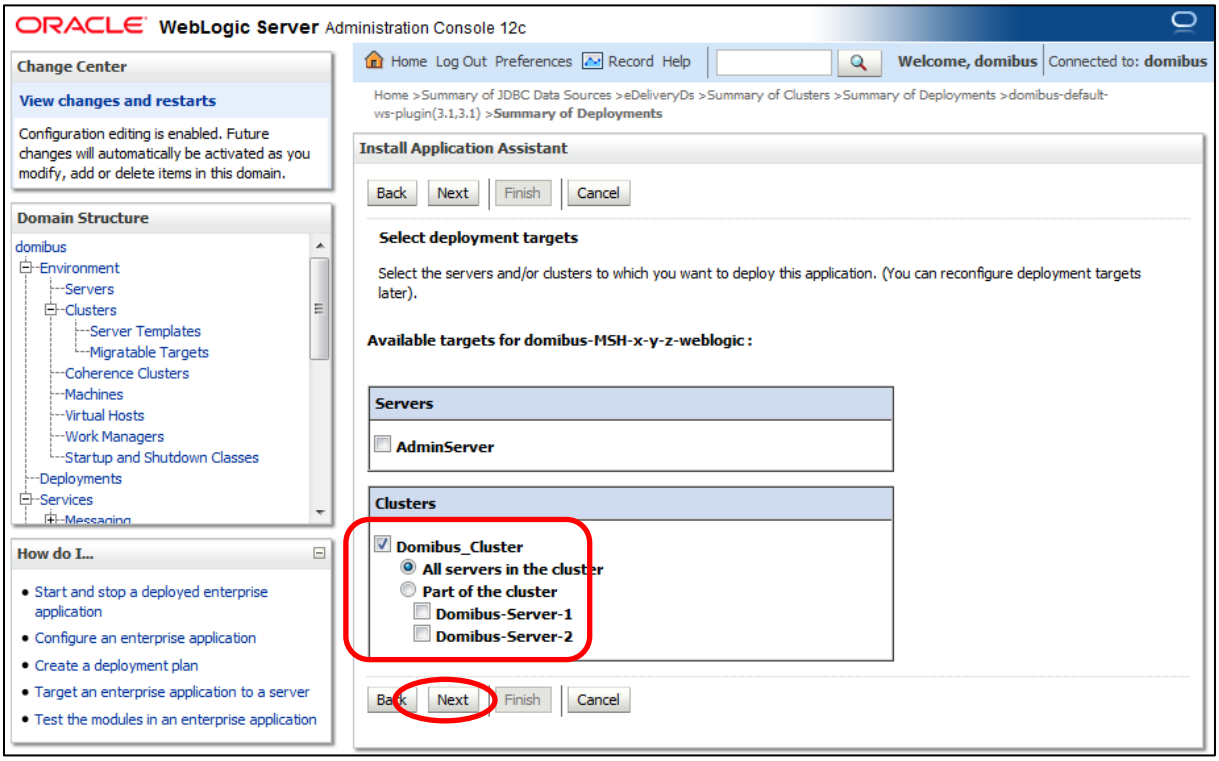
- Select the **domibus-distribution-X.Y.Z-weblogic.war** file and click **Next**:



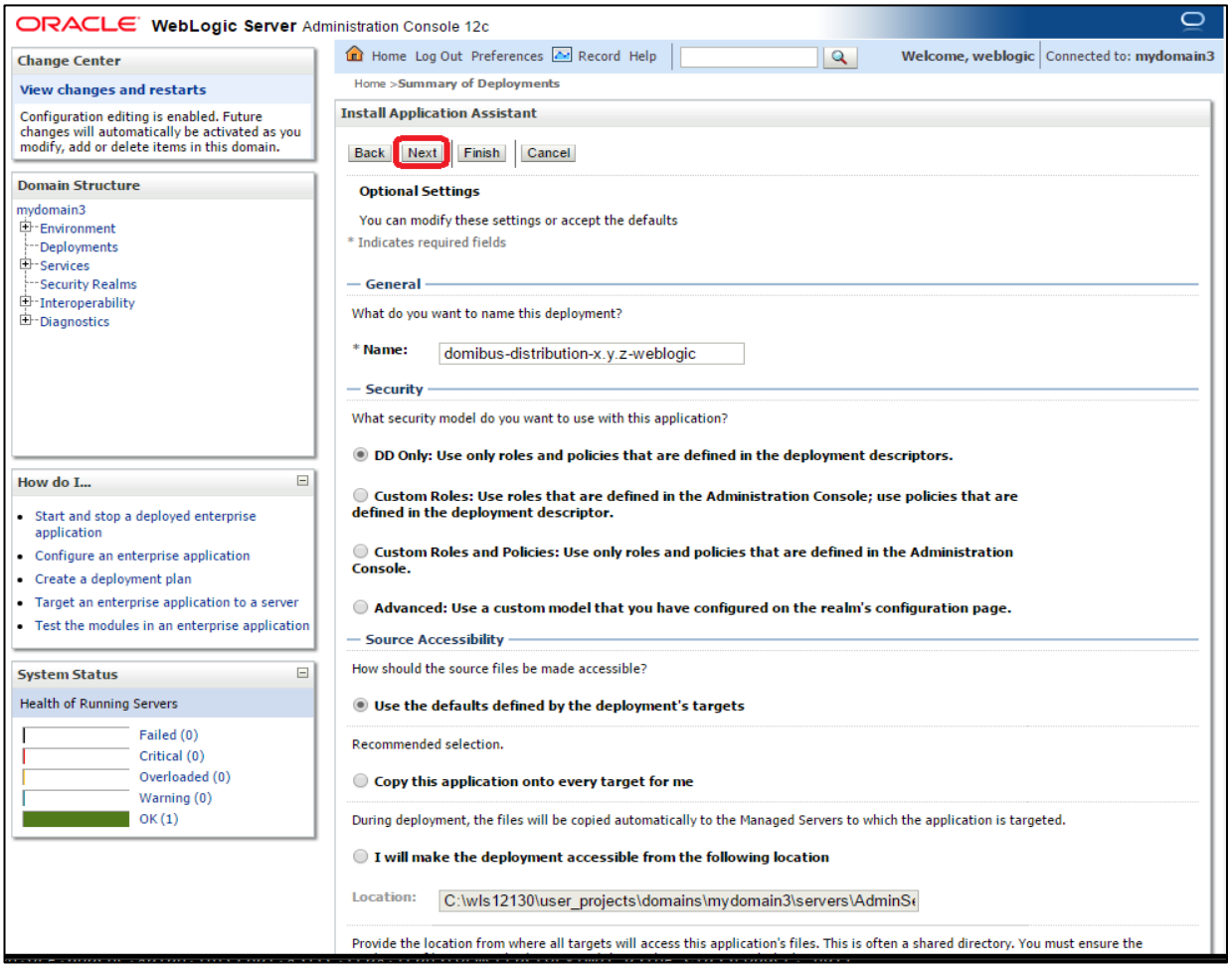
- Choose **Install this deployment as an application** and click **Next**:



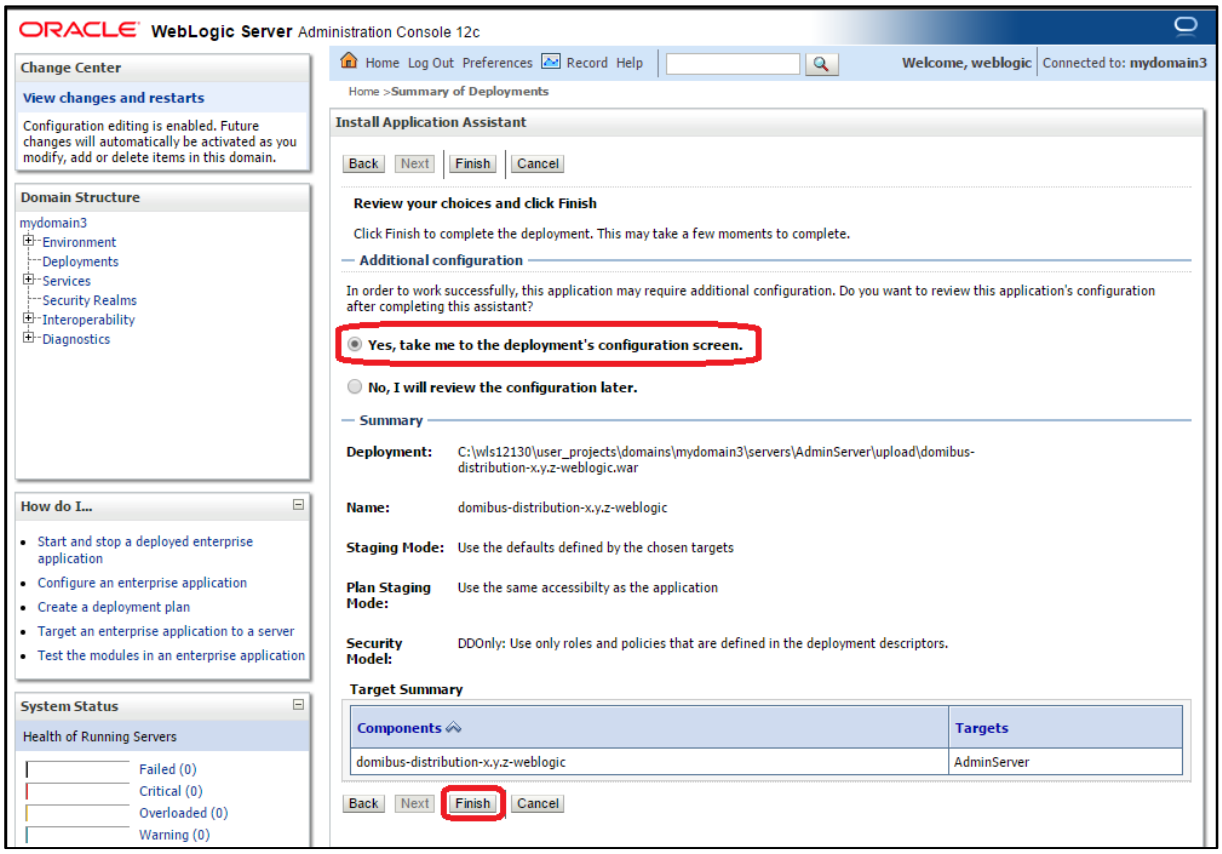
- Select your cluster for the deployment target and click **Next**:



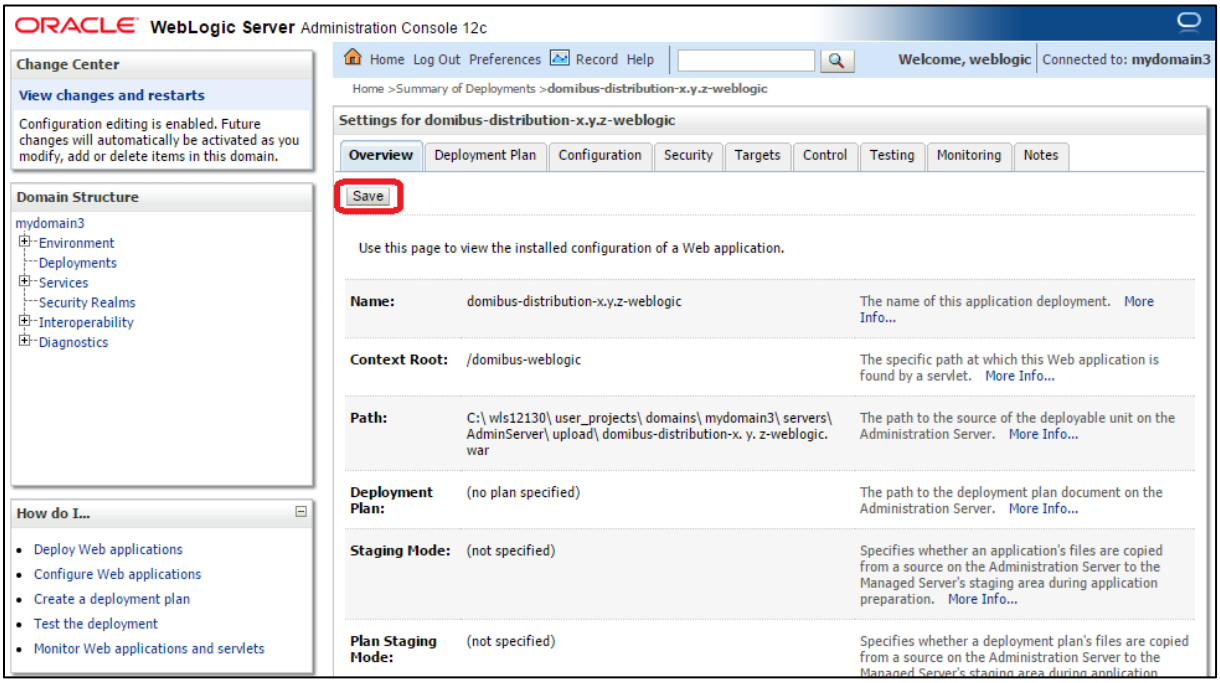
- Select the following options and click **Next**:



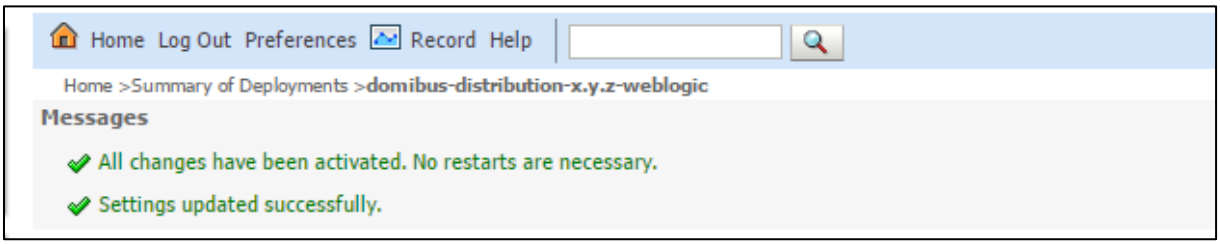
- Select the following option and click **Finish**:



- Here is an overview of the resulting settings, you can now click on the **Save** button:



The expected positive response to the deployment request should be the following:



10. Verify the installation by navigating with your browser to http://*localhost*:*7001*/domibus

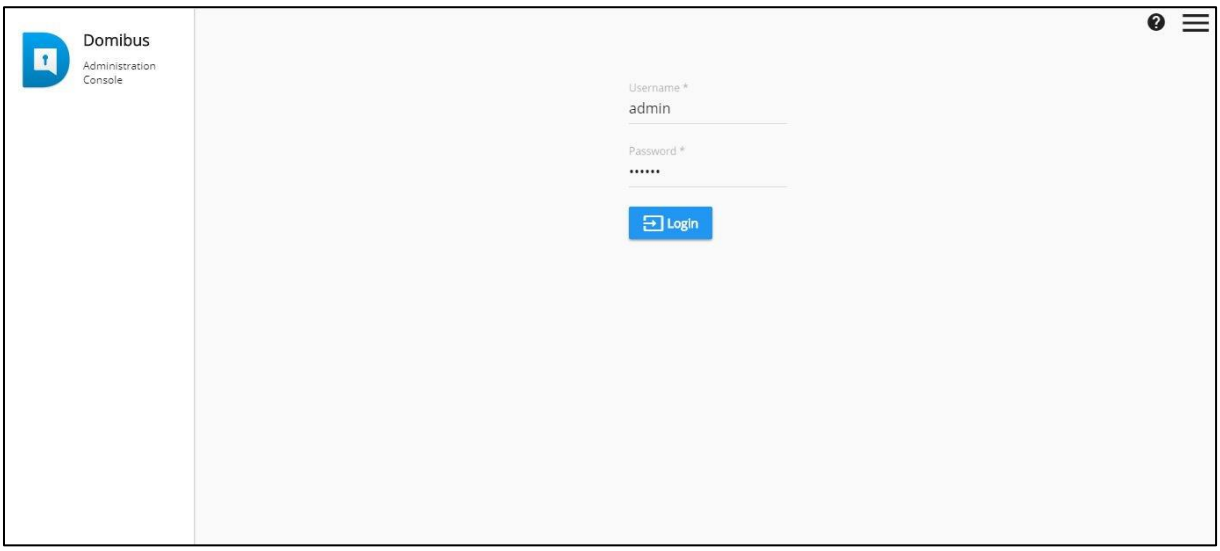
    If you can access the page it means the deployment was successful.

    (by default: user = ***admin***; password = ***123456)***

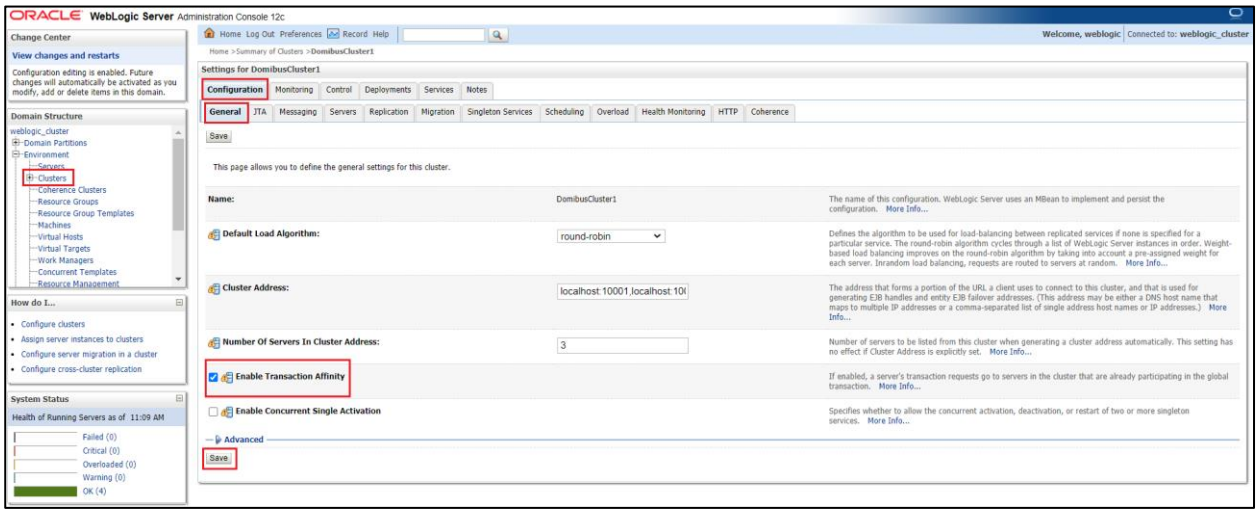
    Remark*:*

    It is recommended to change the passwords for the default users (See §10.1 – *"Administration " for further information).*

Expected result:



11. For performance improvement in a WebLogic cluster, enable transaction cluster affinity (see: https://docs.oracle.com/middleware/12213/wls/WLJTA/trxcon.htm#WLJTA398) and click on save.



REMARK:
In order to send messages containing bodyload payloads you must ensure the WebLogic server is started with the following extra parameter:
-
Dorg.apache.cxf.binding.soap.messageFactoryClassName=com.sun.xml.internal.messaging.saaj.soap.ver1_2.SOAPMessageFactory1_2Impl

4.3. Domibus on Tomcat

Remarks:

- *As Tomcat is not a full Java EE application server and does not offer JMS capabilities by default, Domibus uses ActiveMQ as an in-memory JMS broker when deployed on a Tomcat servlet container. The configuration for the ActiveMQ JMS broker can be found in cef_edelivery_path**/conf/domibus/internal/activemq.xml**.*

- *The Apache CXF library referred by Domibus, internally uses the environment variable java.io.tmpdir to buffer large attachments received. If the property java.io.tmpdir is not specified, then by default this points to the <CATALINA_BASE directory/temp>. It is recommended to point this to a local directory '_tmp' on each managed server and accessible by the Tomcat server. The disk space allocated for '_tmp' directory would depend on the size of attachments received. On production environment it is recommended to provide 100GB for '_tmp'.*

- *CXF has a limitation of being able to validate signatures of only 28 payload attachments at a time. As a result, Domibus cannot send/receive more than 28 attachments in a single AS4 message.*

4.3.1. *Pre-Configured Single Server Deployment*

For this step, you will have to use the following resources (see section §3.1–*"Binaries repository"* for the download location):

- **domibus-distribution-X.Y.Z-tomcat-full.zip**

1. Unzip the archive:

    - Unzip **domibus-distribution-X.Y.Z-tomcat-full.zip** to a location on your physical machine: *cef_edelivery_path*.

2. Prepare the database:

    - For MySQL database:

Add MySQL JDBC driver (available on MySQL official web site cf. [REF2]) in the folder *cef_edelivery_path***/conf/domibus/lib**.

Remark:

The version of the JDBC driver has to be mysql-connector-java-8.0.23.jar or higher.

Edit the properties file *cef_edelivery_path***/conf/domibus/domibus.properties** and adjust the highlighted parts in the text below according to your environment. The properties associated to the database configuration are pre-configured for the MySQL database:

```
# ---------------------------------- Database ----------------------------------
#Database server name
domibus.database.serverName=localhost

#Database port
domibus.database.port=3306

#XA properties
domibus.datasource.xa.property.user=edelivery_user
domibus.datasource.xa.property.password=edelivery_password
#MySQL
domibus.datasource.xa.property.url=jdbc:mysql://${domibus.database.serverName}:${domibus.database.port}/
domibus_schema?pinGlobalTxToPhysicalConnection=true
#Non-XA Datasource
domibus.datasource.url=jdbc:mysql://${domibus.database.serverName}:${domibus.database.port}/domibus_schema?use
SSL=false
domibus.datasource.user=edelivery_user
domibus.datasource.password=edelivery_password
```

    - For Oracle database:

Add the Oracle JDBC driver (e.g. ***ojdbc7.jar***) (available on the Oracle official web site cf.[REF3]) in the *cef_edelivery_path***/lib folder**.

Edit the properties file *cef_edelivery_path***/conf/domibus/domibus.properties** and adjust the highlighted parts in the text below according to your environment:

```
# ---------------------------------- Database ---------------------------------
#Database server name
domibus.database.serverName=localhost

#Database port
domibus.database.port=1521

#General schema. Mandatory only if Domibus is configured in multi-tenancy mode.
#domibus.database.general.schema=general_schema

#set domibus.database.schema=oracle_username
domibus.database.schema= oracle_username

#XA Datasource
#Oracle
domibus.datasource.xa.xaDataSourceClassName=oracle.jdbc.xa.client.OracleXADataSource

domibus.datasource.xa.maxLifetime=60
domibus.datasource.xa.minPoolSize=5
domibus.datasource.xa.maxPoolSize=100
domibus.datasource.xa.borrowConnectionTimeout=30
domibus.datasource.xa.reapTimeout=0
domibus.datasource.xa.maxIdleTime=60
domibus.datasource.xa.maintenanceInterval=60

#XA properties
domibus.datasource.xa.property.user= oracle_username
domibus.datasource.xa.property.password=edelivery_password

#Oracle
domibus.datasource.xa.property.URL=jdbc:oracle:thin:@${domibus.database.serverName}:${domibus.database.port}/XE

#Non-XA Datasource
#Oracle
domibus.datasource.driverClassName=oracle.jdbc.OracleDriver
domibus.datasource.url=jdbc:oracle:thin:@${domibus.database.serverName}:${domibus.database.port}/domibus

domibus.datasource.user= oracle_username
domibus.datasource.password=edelivery_password
domibus.datasource.maxLifetime=30
domibus.datasource.minPoolSize=5
domibus.datasource.maxPoolSize=100
```

Remark:

Configure the database dialect as it is pre-configured for MySQL by default.

```
#EntityManagerFactory
domibus.entityManagerFactory.jpaProperty.hibernate.connection.driver_class=oracle.jdbc.xa.client.OracleXADataSource
domibus.entityManagerFactory.jpaProperty.hibernate.dialect=org.hibernate.dialect.OracleDialect
```

3. Configure your Keystore based on section §5.1.2 – *"Certificates"*.

4. Set JVM parameters:

Domibus expects a single environment variable **domibus.config.location**, pointing towards the *cef_edelivery_path***/conf/domibus** folder.

You can do this by editing the first command lines of *cef_edelivery_path***\bin\setenv.bat** (Windows) or *cef_edelivery_path***/bin/setenv.sh** (Linux). Set **CATALINA_HOME** equal to the absolute path of the installation ***cef_edelivery_path*.**

- **For Windows** : edit *cef_edelivery_path***\bin\setenv.bat** by adding the following:

```
…
set CATALINA_HOME=cef_edelivery_path
set CATALINA_TMPDIR=<path to _tmp directory>
set  JAVA_OPTS=%JAVA_OPTS% -Dfile.encoding=UTF-8  -Xms128m -Xmx1024m -XX:PermSize=64m
set JAVA_OPTS=%JAVA_OPTS% -Ddomibus.config.location=%CATALINA_HOME%\conf\domibus
…
```

- **For Linux** : edit *cef_edelivery_path***/domibus/bin/setenv.sh** by adding the following:

```
…
export CATALINA_HOME=cef_edelivery_path
export CATALINA_TMPDIR=<path to _tmp directory>
export JAVA_OPTS="$JAVA_OPTS -Xms128m -Xmx1024m "
export JAVA_OPTS="$JAVA_OPTS -Ddomibus.config.location=$CATALINA_HOME/conf/domibus"
…
```

5. Launch the Domibus application:

   - For Windows :

```
cd cef_edelivery_path\bin\
startup.bat
```

   - For Linux :

```
cd cef_edelivery_path/bin
chmod  u+x *.sh
./startup.sh
```

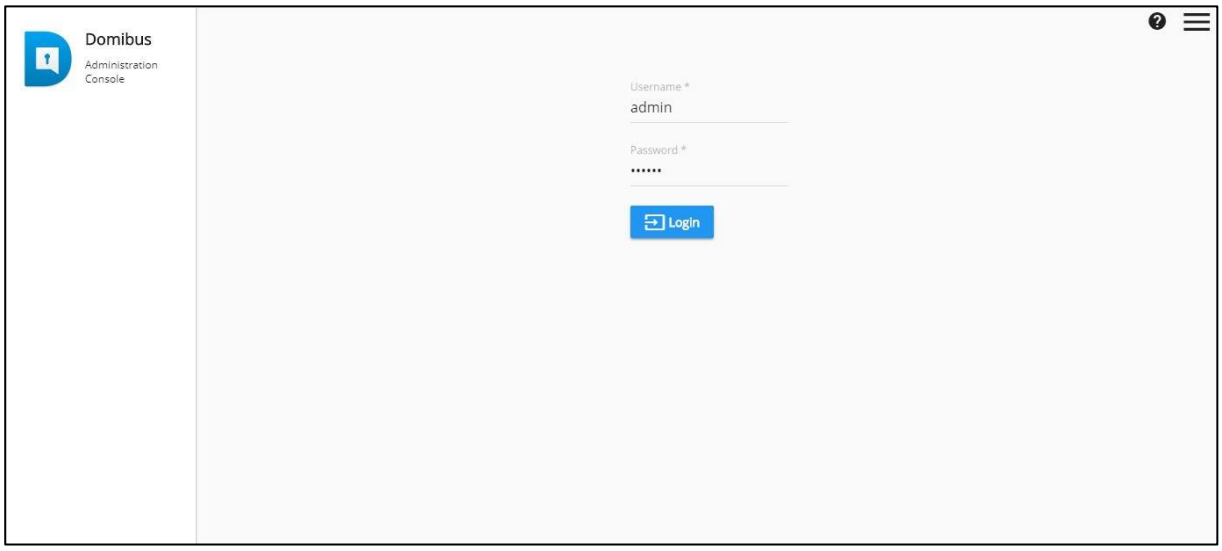
6. Display the Domibus home page on your browser: http://localhost:8080/domibus.
   (By default: User = ***admin***; Password = ***123456)***

   Remark*:*

   It is recommended to change the passwords for the default users. See §10.1 – "Administration " for further information.

   If you can access the page it means the deployment was successful.

Expected result:



4.3.2. Single Server Deployment

For this step, you will have to use the following resources (see §3.1–*" Binaries repository"* for the download location):

- **domibus-distribution-X.Y.Z-tomcat-configuration.zip**
- **domibus-distribution-X.Y.Z-tomcat-war.zip**
- **domibus-distribution-4.2-sql-scripts.zip**
- **domibus-distribution-4.2-tomcat-configuration.zip**
- **domibus-distribution-4.2-default-ws-plugin.zip**
- **domibus-distribution-4.2-default-jms-plugin.zip (optional)**
- **domibus-distribution-4.2-default-fs-plugin.zip (optional)**
- **domibus-distribution-4.2-tomcat-war.zip**
- **domibus-distribution-4.2-sample-configuration-and-testing.zip**
- **domibus-MSH-tomcat-4.2.war**
- **Mysql-connector-java-X.Y.Z driver (e.g: mysql-connector-java-8.0.23.jar) [REF2])**

We assume that an Apache Tomcat 9.x is already installed and the installation location is now considered as your *cef_edelivery_path***.**

1. Download and unzip the artefact **domibus-distribution-X.Y.Z-tomcat-configuration.zip** into the directory *cef_edelivery_path/conf/domibus.*
2. Configure the MySQL or Oracle datasource as indicated in §4.3.1 – *"Pre-Configured Single Server Deployment"*
3. Configure your Keystore based on §5.1.2 – *"Certificates".*
4. Execute *step 4* from §4.3.1 – *"Pre-Configured Single Server Deployment"*.
5. If not already present, create a folder and name it **temp** under *cef_edelivery_path/conf/Domibus*.
6. Rename **domibus-MSH-X.Y.Z-tomcat.war** to **domibus.war** and deploy it to *cef_edelivery_path***/webapps**.

7. Copy Plugins subfolders to the conf/Domibus/plugins folder
8. Add the conf/dombuis path (to catalina.sh or setenv.sh). Add the following highlighted lines:
   - *JAVA_OPTS="$JAVA_OPTS -Djava.protocol.handler.pkgs=org.apache.catalina.webresources"*
   - export JAVA_OPTS="$JAVA_OPTS -Xms128m -Xmx1024m "
   - export JAVA_OPTS="$JAVA_OPTS -domibus.config.location=$CATALINA_HOME/conf/domibus"
   - *#Check for the deprecated LOGGING_CONFIG*
9. Copy the Mysql connector (e.g: mysql-connector-java-8.0.23.jar) to the lib folder.
10. From domibus-distribution-4.2-sample-configuration-and-testing.zip, copy the keystores folder to …/conf/Domibus
11. Rename the domibus-MSH-tomcat-4.2.war to Domibus.war and copy it to webapps
12. Launch the Domibus application:
    - For Windows :

```
cd cef_edelivery_path\bin\
startup.bat
```

    - For Linux :

```
cd cef_edelivery_path/bin/
chmod +x *.sh
./startup.sh
```

13. Display the Domibus home page on your browser: http://localhost:8080/domibus

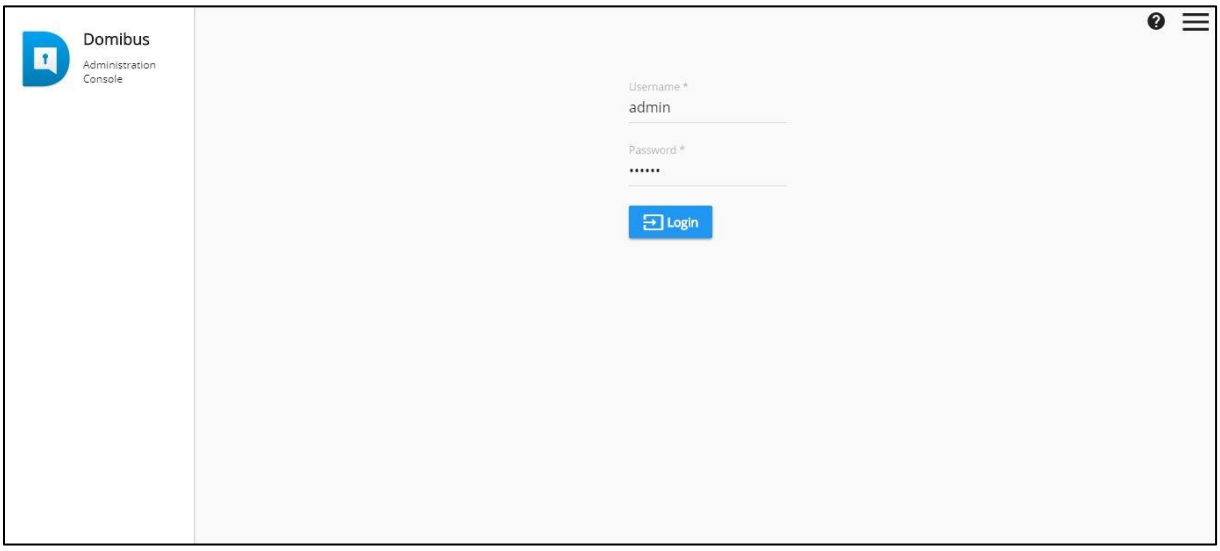
    (By default: User = ***admin***; Password = ***123456)****:*

    Remark*:*

    It is recommended to change the passwords for the default users. See §10.1 – "Administration " for further information.

    Accessing the page is an indication of a successful deployment.

Expected result:



4.3.3. Clustered Deployment

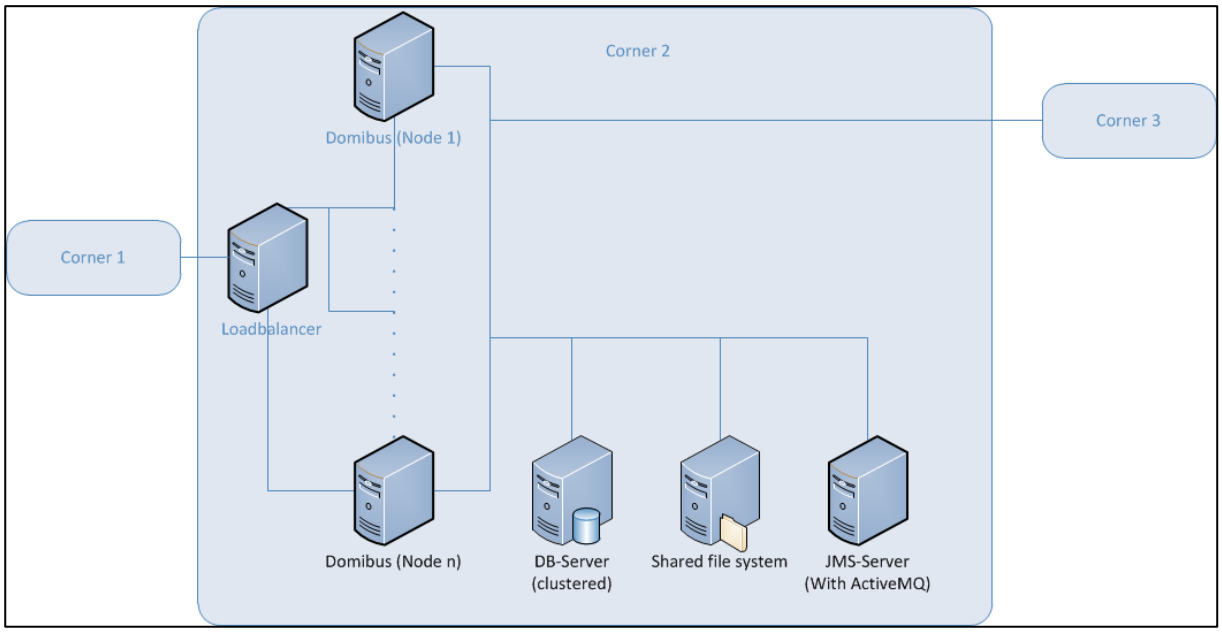


Figure 2 - Diagram representing the Deployment of Domibus in a Cluster on Tomcat

Remark:

In this section we assume that a JMS Broker and a Loadbalancer are configured separately (e.g. httpd).

For this step, you will have to use the following resources (see §3.1–" *Binaries repository* "for the download location):

- **domibus-distribution-X.Y.Z-tomcat-full.zip**
- **domibus-distribution-X.Y.Z-tomcat-war.zip**

1. Follow steps **1**, **2, 3, 4** and **5** from the §4.3.2 – *"Single Server Deployment"*

2. Set the JVM parameters:

Domibus expects a single JVM parameter **$domibus.config.location**, pointing towards the *cef_edelivery_path* folder.

You can do this by editing *cef_edelivery_path***\bin\setenv.bat** (Windows) or *cef_edelivery_path***/bin/setenv.sh** (Linux). Set **CATALINA_HOME** equal to the absolute path of the installation *cef_edelivery_path*.

- For Windows**:** edit *cef_edelivery_path***\bin\setenv.bat** by adding the following:

Remark:

your_node_id refers to the installed node in the cluster which starts normally at 01(then 02, etc.).

```
…
set CATALINA_HOME=cef_edelivery_path
set CATALINA_TMPDIR=<path to _tmp directory>
set  JAVA_OPTS=%JAVA_OPTS% -Dfile.encoding=UTF-8 -Xms128m -Xmx1024m -XX:PermSize=64m
set JAVA_OPTS=%JAVA_OPTS% -Ddomibus.config.location=%CATALINA_HOME%\conf\domibus
set JAVA_OPTS=%JAVA_OPTS% -Ddomibus.node.id=your_node_id
…
```

- For Linux : edit *cef_edelivery_path***/bin/setenv.sh** by adding the following:

```
…
export CATALINA_HOME=cef_edelivery_path
export CATALINA_TMPDIR=<path to _tmp directory>
export JAVA_OPTS=$JAVA_OPTS –Xms128m –Xmx1024m
export JAVA_OPTS="$JAVA_OPTS -Ddomibus.config.location=$CATALINA_HOME/conf/domibus"
export JAVA_OPTS="$JAVA_OPTS -Ddomibus.node.id=your_node_id"
…
```

3. Integrate the external JMS Broker with Domibus by adapting the following properties in *cef_edelivery_path***/conf/domibus/domibus.properties**.
   - Please note that the **activeMQ.embedded.configurationFile** property should be deleted as the JMS broker is external.

```
#ActiveMQ
activeMQ.broker.host=localhost
activeMQ.brokerName=localhost
#activeMQ.embedded.configurationFile=file:///${domibus.config.location}/internal/activemq.xml
activeMQ.connectorPort=1199
activeMQ.rmiServerPort=1200
activeMQ.transportConnector.uri=tcp://${activeMQ.broker.host}:61616
activeMQ.username=domibus
activeMQ.password=changeit
```

4. Change the following properties related to the **Atomikos** configuration in parameters in *cef_edelivery_path***/conf/domibus/domibus.properties**:

For clustered deployment:

Uncomment the following lines:

```
#com.atomikos.icatch.output_dir=${domibus.work.location:${domibus.config.location}}/work/transactions/${domibus.node.id}
#com.atomikos.icatch.log_base_dir=${domibus.work.location:${domibus.config.location}}/work/transactions/${domibus.node.id}/log
```

Comment the following lines:
com.atomikos.icatch.output_dir=${domibus.work.location:${domibus.config.location}}/work/transactions
com.atomikos.icatch.log_base_dir=${domibus.work.location:${domibus.config.location}}/work/transactions/log
Set the *domibus.deployment.clustered* option to true:
domibus.deployment.clustered=true

5. Follow step **6** and **7** from the §4.3.2 – *"Single Server Deployment".*

4.4. Domibus on WildFly

Remark:

- *The Apache CXF library referred to by Domibus, uses the environment variable java.io.tmpdir to buffer large attachments received, internally. If the java.io.tmpdir property is not specified, then this defaults to values provided by the operating system to the JRE. On Unix/Linux systems this usually defaults to '/tmp'. On Windows systems this usually defaults to %TEMP% folder. It is recommended to point this to a local directory '_tmp' on each managed server and accessible by the WildFly server. The disk space allocated for '_tmp' directory would depend on the size of attachments received. On production environment it is recommended to provide 100GB for '_tmp'.*

- *CXF has a limitation of being able to validate signatures of only 28 payload attachments at a time. As a result, the Domibus cannot send/receive more than 28 attachments in a single AS4 message.*

4.4.1. *Pre-Configured Single Server Deployment*

In this section we assume that WildFly is installed at the location *cef_edelivery_path*.

For this step, you will have to use the following resources (see section §3.1–*" Binaries repository"* for the download location):

- **domibus-distribution-X.Y.Z-wildfly-full.zip (WildFly 20 version)**

Remark: below steps apply for both distributions of Domibus.

1. Download and unzip the **domibus-distribution-X.Y.Z-wildfly-full.zip** archive in your *cef_edelivery_path* location.

2. Configure the MySQL database (Option 1).

- Drivers:

  Create the directory *cef_edelivery_path***/modules/system/layers/base/com/mysql/main** if it does not exist**.**
  Under this directory:

  - Download the MySQL JDBC driver available on MySQL official web site (cf.[REF2]) and copy it in the folder.

    Remark:

    The version of the driver has to be mysql-connector-java-8.0.23.jar or higher.

  - Create or edit the file *cef_edelivery_path***/modules/system/layers/base/com/mysql/main/module.xml** and copy the following module configuration. Make sure to put the name of the driver you are using as an argument of **resource-root** element. e.g. ***mysql-connector-java-8.0.23.jar***:

```
<module xmlns="urn:jboss:module:1.3" name="com.mysql">
        <resources>
                <resource-root path="mysql-connector-java-8.0.23.jar"/>
        </resources>
        <dependencies>
                <module name="javax.api"/>
                <module name="javax.transaction.api"/>
    </dependencies>
</module>
```

  - Add your DBMS driver metadata to the Drivers section of the *cef_edelivery_path***/standalone/configuration/standalone-full.xml**.

```
<subsystem xmlns="urn:jboss:domain:datasources:3.0">
  ……….
  <datasources>
    ……….
    <drivers>
          <driver name="com.mysql" module="com.mysql">
       <driver-class>com.mysql.jdbc.Driver</driver-class>
       <xa-datasource-class>
              com.mysql.jdbc.jdbc2.optional.MysqlXADataSource
       </xa-datasource-class>
       <!--Connector/J 8.0.x
      <driver-class>com.mysql.cj.jdbc.Driver</driver-class>
      <xa-datasource-class>com.mysql.cj.jdbc.MysqlXADataSource</xa-datasource-class>
       -->
     </driver>

            <!--Oracle

            <driver name="com.oracle" module="com.oracle">

              <driver-class>oracle.jdbc.driver.OracleDriver</driver-class>

            </driver>
            -->
    <drivers>
```

```
    ……..
  </datasources>
  ……..
</subsystem>
```

- Datasources:
  - Add the datasources as indicated below to *cef_edelivery_path***/standalone/configuration/standalone-full.xml**.

Remark:

*Please make sure you modify the connection details for the **MysqlXADS** datasource for MySQL according to your environment.*

```
<subsystem xmlns="urn:jboss:domain:datasources:3.0">
<datasources>
……..
<xa-datasource jndi-name="java:/jdbc/cipaeDeliveryDs" pool-
name="eDeliveryMysqlXADS" enabled="true" use-ccm="true" statistics-enabled="true">
          <xa-datasource-property name="ServerName">localhost</xa-datasource-property>
        <xa-datasource-property name="DatabaseName">domibus_schema</xa-datasource-property>
        <xa-datasource-class>com.mysql.jdbc.jdbc2.optional.MysqlXADataSource</xa-datasource-class>
          <!--Connector/J 8.0.x
          <xa-datasource-class>com.mysql.cj.jdbc.MysqlXADataSource</xa-datasource-class>
         -->

          <driver>com.mysql</driver>
             <security>
               <user-name>edelivery_user</user-name>
               <password>edelivery_password</password>
             </security>
<validation>
<valid-connection-checker class-
name="org.jboss.jca.adapters.jdbc.extensions.mysql.MySQLValidConnectionChecker"/>
<background-validation>true</background-validation>
<exception-sorter class-name="org.jboss.jca.adapters.jdbc.extensions.mysql.MySQLExceptionSorter"/>
                    </validation>
          </xa-datasource>
<datasource jndi-name="java:/jdbc/cipaeDeliveryNonXADs" pool-name="eDeliveryMysqlNonXADS"
enabled="true" use-ccm="true">
   <connection-url>jdbc:mysql://localhost:3306/domibus_schema</connection-url>
   <driver-class>com.mysql.jdbc.Driver</driver-class>
   <!--Connector/J 8.0.x
   <driver-class>com.mysql.cj.jdbc.Driver</driver-class>
    -->
   <driver>com.mysql</driver>
   <security>
      <user-name>edelivery_user</user-name>
      <password>edelivery_password</password>
   </security>
   <validation>
      <valid-connection-checker class-
name="org.jboss.jca.adapters.jdbc.extensions.mysql.MySQLValidConnectionChecker"/>
      <background-validation>true</background-validation>
      <exception-sorter class-
```

```
name="org.jboss.jca.adapters.jdbc.extensions.mysql.MySQLExceptionSorter"/>
   </validation>
</datasource>
……..
         </datasources>
</subsystem>
```

3. Configure the Oracle Database (option 2):
    - Drivers:

Create the directory *cef_edelivery_path***/modules/system/layers/base/com/oracle/main** if it does not exist. Under this directory:

- Download and copy the Oracle JDBC driver (e.g. ***ojdbc7.jar***, available on the Oracle official web site cf.[REF3]) in the folder.
- Create or edit the file *cef_edelivery_path***/modules/system/layers/base/com/oracle/main/module.xml** in the recently created folder.

  Add the following module configuration. Make sure to put the name of the driver you are using as an argument of **resource-root** element. e.g. ***ojdbc7.jar***:

```
<module xmlns="urn:jboss:module:1.3" name="com.oracle">
        <resources>
                <resource-root path="ojdbc7.jar"/>
        </resources>
        <dependencies>
                <module name="javax.api"/>
                <module name="javax.transaction.api"/>
        </dependencies>
</module>
```

- Uncomment Oracle paragraph from the Drivers section in *cef_edelivery_path***/standalone/configuration/standalone-full.xml** .

```
<subsystem xmlns="urn:jboss:domain:datasources:3.0">
  ……..
  <datasources>
    ……..
    <drivers>
          <driver name="com.mysql" module="com.mysql">
       <driver-class>com.mysql.jdbc.Driver</driver-class>
       <xa-datasource-class>
     com.mysql.jdbc.jdbc2.optional.MysqlXADataSource
       </xa-datasource-class>
       <!--Connector/J 8.0.x
      <driver-class>com.mysql.cj.jdbc.Driver</driver-class>
      <xa-datasource-class>com.mysql.cj.jdbc.MysqlXADataSource</xa-datasource-class>
       -->
     </driver>

            <!--Oracle

            <driver name="com.oracle" module="com.oracle">

              <driver-class>oracle.jdbc.driver.OracleDriver</driver-class>
```

```
            </driver>
            -->
        <drivers>
        ……….
    </datasources>
    ……..
</subsystem>
```

- Datasources:
  - Uncomment the Oracle paragraph from the datasources section of *cef_edelivery_path***/standalone/configuration/standalone-full.xml**.

Remark:

Please make sure you modify the connection details for both ***eDeliveryOracleNonXADS*** *and* ***eDeliveryOracleXADS*** *datasource for Oracle according to your environment.*

```
<!-- Oracle
<datasource jta="true" jndi-name="java:/jdbc/cipaeDeliveryNonXADs" pool-
name="eDeliveryOracleNonXADS" enabled="true" use-ccm="true">
   <connection-url>jdbc:oracle:thin:@localhost:1521[:SID|/Service]</connection-url>
   <driver-class>oracle.jdbc.OracleDriver</driver-class>
   <driver>com.oracle</driver>
   <security>
      <user-name>edelivery_user</user-name>
      <password>edelivery_password</password>
   </security>
   <validation>
      <valid-connection-checker class-
name="org.jboss.jca.adapters.jdbc.extensions.oracle.OracleValidConnectionChecker"/>
      <background-validation>true</background-validation>
      <stale-connection-checker class-
name="org.jboss.jca.adapters.jdbc.extensions.oracle.OracleStaleConnectionChecker"/>
      <exception-sorter class-
name="org.jboss.jca.adapters.jdbc.extensions.oracle.OracleExceptionSorter"/>
   </validation>
</datasource>
-->

…
<!-- Oracle
<xa-datasource jndi-name="java:/jdbc/cipaeDeliveryDs" pool-name="eDeliveryOracleXADS"
enabled="true" use-ccm="true">
   <xa-datasource-property name="URL">
      jdbc:oracle:thin:@localhost:1521[:SID|/Service]
   </xa-datasource-property>
   <xa-datasource-class>oracle.jdbc.xa.client.OracleXADataSource</xa-datasource-class>
   <driver>com.oracle</driver>
   <security>
      <user-name>edelivery_user</user-name>
      <password>edelivery_password</password>
   </security>
   <validation>
      <valid-connection-checker class-
name="org.jboss.jca.adapters.jdbc.extensions.oracle.OracleValidConnectionChecker"/>
      <exception-sorter class-
name="org.jboss.jca.adapters.jdbc.extensions.oracle.OracleExceptionSorter"/>
   </validation>
</xa-datasource>
-->
```

- Edit the configuration file *cef_edelivery_path***/conf/domibus/domibus.properties** and configure the datasources as indicated below.

Remark:

Configure the database dialect as it is pre-configured for MySQL by default.

```
#EntityManagerFactory
domibus.entityManagerFactory.jpaProperty.hibernate.connection.driver_class=oracle.jdbc.xa.client.OracleXADataSource
domibus.entityManagerFactory.jpaProperty.hibernate.dialect=org.hibernate.dialect.OracleDialect
```

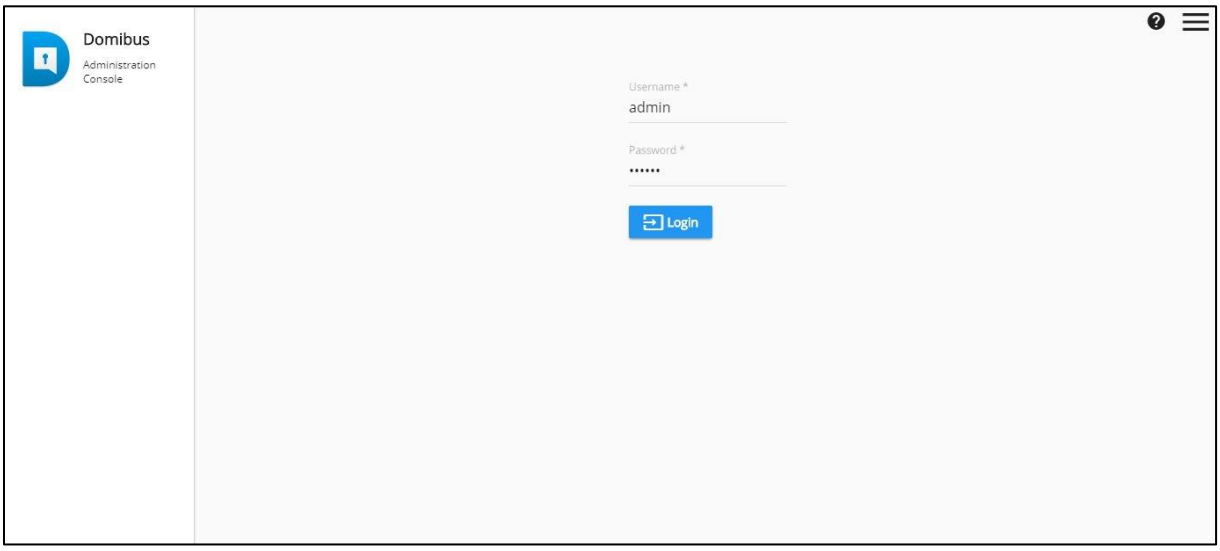
4. Configure your Keystore based on §5.1.2 – *"Certificates"*.
5. Run the standalone server:
   - For Windows under *cef_edelivery_path***\bin**
   - **standalone.bat --server-config=standalone-full.xml**
   - For Linux under *cef_edelivery_path***/bin/**
   - **standalone.sh --server-config=standalone-full.xml**
6. Display the Domibus home page in your browser: http://*localhost*:*8080*/domibus
   (by default: User = ***admin***; Password = ***123456***).

   Remark:

   It is recommended to change the passwords for the default users. See §10.1 – *"Administration " for further information.*

   If you can access the page it means the deployment was successful.

Expected result:



4.4.2. Single Server Deployment

4.4.2.1. WildFly 20 Configuration

In this section we assume that WildFly version 20 is installed at location *cef_edelivery_path*.

For this step, you will have to use the following resources (see section §3.1-"*Binaries repository* " for the download location):

- **domibus-distribution-X.Y.Z-wildfly20-war.zip**

- **domibus-distribution-X.Y.Z-wildfly20-configuration.zip**

1. Run the WildFly 20 JBOSS CLI in order to configure *cef_edelivery_path***/standalone/configuration/standalone-full.xml** from the command line:

   - Extract the configuration scripts from the **domibus-distribution-X.Y.Z-wildfly20-configuration.zip** file under the scripts directory

   - Configure the JBOSS CLI tool

     i. For Windows:
     configure.bat

     ii. For Linux:
     configure.sh

   - Extract the script **configure.[bat|sh]** from **domibus-distribution-X.Y.Z-wildfly20-configuration.zip** under the scripts directory and adapt the following properties:

     i. For Windows:

Remark:

*The **configure.bat** script uses Windows Powershell present on machines running Windows 7 SP1 or later.*

1. Common to Oracle and MySQL

```
SET JBOSS_HOME=C:\path\to\wildfly20
SET SERVER_CONFIG=standalone-full.xml
```

2. For Oracle database:

```
SET DB_TYPE=Oracle
SET DB_HOST=localhost
SET DB_PORT=1521
SET DB_USER=edelivery_user
SET DB_PASS=edelivery_password
SET
JDBC_CONNECTION_URL="jdbc:oracle:thin:@%DB_HOST%:%DB_PORT%[:SID/Service]"
SET
JDBC_DRIVER_DIR=%JBOSS_HOME%\modules\system\layers\base\com\oracle\main
SET JDBC_DRIVER_NAME=ojdbc-X.Y.Z.jar
```

Remark:

Oracle configuration is commented by default. To enable Oracle, remove the comment (::) from the lines below. Don't forget to add the comment (::) for MySQL to disable it.

3. For MySQL:

```
SET DB_TYPE=MySQL
SET DB_HOST=localhost
SET "DB_NAME=domibus_schema?autoReconnect=true^&useSSL=false"
SET DB_PORT=3306
SET DB_USER=edelivery
```

```
SET DB_PASS=edelivery
SET JDBC_CONNECTION_URL=jdbc:mysql://%DB_HOST%:%DB_PORT%/!DB_NAME!
SET
JDBC_DRIVER_DIR=%JBOSS_HOME%\modules\system\layers\base\com\mysql\main
SET JDBC_DRIVER_NAME=mysql-connector-java-X.Y.Z.jar
```

ii. For Linux:

1. Common to Oracle and MySQL

```
JBOSS_HOME=/path/to/wildfly20
SERVER_CONFIG=standalone-full.xml
```

2. For Oracle database:

```
DB_TYPE=Oracle
DB_HOST=localhost
DB_PORT=1521
DB_USER=edelivery_user
DB_PASS=edelivery_password
JDBC_CONNECTION_URL="jdbc:oracle:thin:@${DB_HOST}:${DB_PORT}[:SID/Service]"
JDBC_DRIVER_DIR=${JBOSS_HOME}/modules/system/layers/base/com/oracle/main
JDBC_DRIVER_NAME=ojdbc-X.Y.Z.jar
```

Remark:

Oracle configuration is commented by default. To enable Oracle, remove the comment (#) from the lines below. Don't forget to add the comment (#) for MySQL to disable it.

3. For MySQL:

```
DB_TYPE=MySQL
DB_HOST=localhost
DB_NAME=domibus_schema?autoReconnect=true\&useSSL=false
DB_PORT=3306
DB_USER=edelivery_user
DB_PASS=edelivery_password
JDBC_CONNECTION_URL=jdbc:mysql://${DB_HOST}:${DB_PORT}/${DB_NAME}
JDBC_DRIVER_DIR=${JBOSS_HOME}/modules/system/layers/base/com/mysql/main
JDBC_DRIVER_NAME=mysql-connector-java-X.Y.Z.jar
```

- Execute the following command from within the **scripts** directory:

i. For Windows:

configure.bat

ii. For Linux:

configure.sh

Expected result:

```
{"outcome" => "success"}
{"outcome" => "success"}
{"outcome" => "success"}
{"outcome" => "success"}
{"outcome" => "success"}
{"outcome" => "success"}
{"outcome" => "success"}
{"outcome" => "success"}
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{"outcome" => "success"}
{"outcome" => "success"}
{"outcome" => "success"}
{"outcome" => "success"}
{"outcome" => "success"}
{"outcome" => "success"}
{"outcome" => "success"}
{"outcome" => "success"}
{
    "outcome" => "success",
    "response-headers" => {
        "operation-requires-reload" => true,
        "process-state" => "reload-required"
    }
}
{
    "outcome" => "success",
    "response-headers" => {
        "operation-requires-reload" => true,
        "process-state" => "reload-required"
    }
}
Press any key to continue . . .
```

2. Follow steps **2** (MySQL) or **3** (Oracle) from the §4.4.1 – *"Pre-Configured Single Server Deployment",* and replace the "**%JDBC_DRIVER_DIR%\%JDBC_DRIVER_NAME%"** (Windows) or "**${JDBC_DRIVER_DIR}\${JDBC_DRIVER_NAME}"** (Linux) directory with the actual JDBC file.

Remark:

*The cef_edelivery_path**/standalone/configuration/standalone-full.xml,** the file cef_edelivery_path*/**modules/system/layers/base/com/mysql/main/module.xml** *and the cef_edelivery_path*/**modules/system/layers/base/com/oracle/main/modules.xml** *files should already have the correct details filled in.*

3. Configure the environment variables:

   For Windows: edit cef_edelivery_path/bin/standalone.conf.bat as follows:

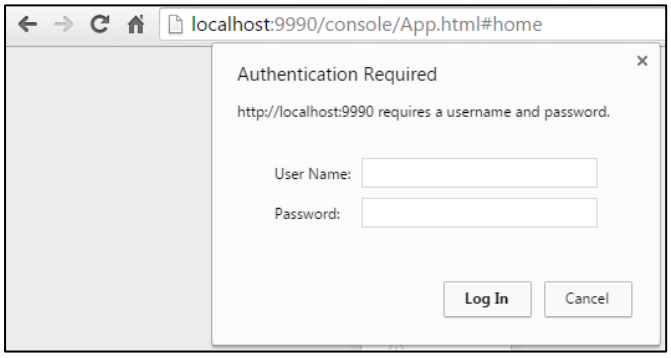
```
……
JAVA_OPTS="-Xms128m –Xmx1024m
 java.net.preferIPv4Stack=true"
JAVA_OPTS="$JAVA_OPTS -Ddomibus.config.location=$JBOSS_HOME/conf/Domibus domibus -
Djava.io.tmpdir=<path to _tmp directory>"

……
```

4. For Unix/Linux: edit cef_edelivery_path/bin/standalone.conf as follows:

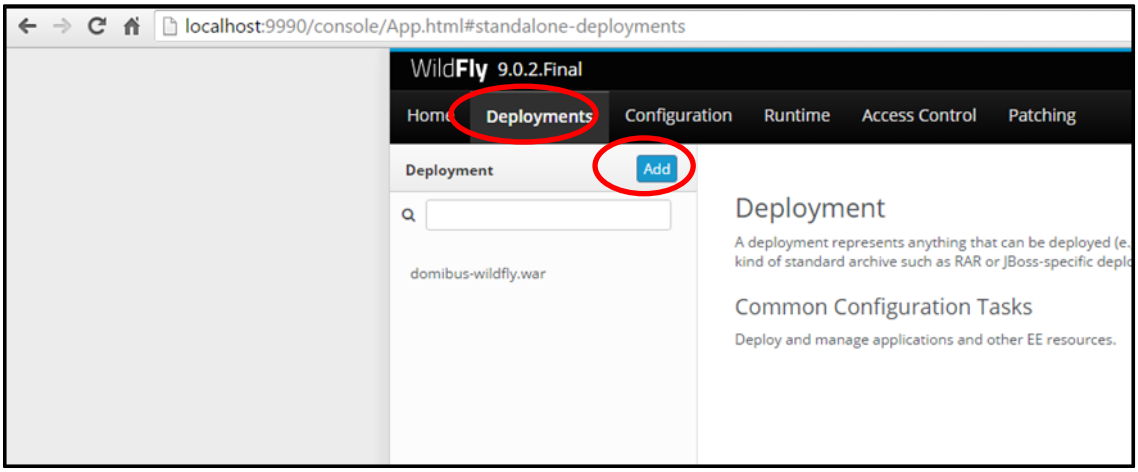
```
……
JAVA_OPTS="-Xms128m –Xmx1024m
 java.net.preferIPv4Stack=true"
JAVA_OPTS="$JAVA_OPTS -Ddomibus.config.location=$JBOSS_HOME/conf/Domibus domibus -
Djava.io.tmpdir=<path to _tmp directory>"

……
```

5. Download and unzip **domibus-distribution-X.Y.Z-wildfly20-configuration.zip** in the directory *cef_edelivery_path***/conf/domibus,** excluding the scripts directory.
6. Configure your Keystore based on §5.1.2 – *"Certificates".*

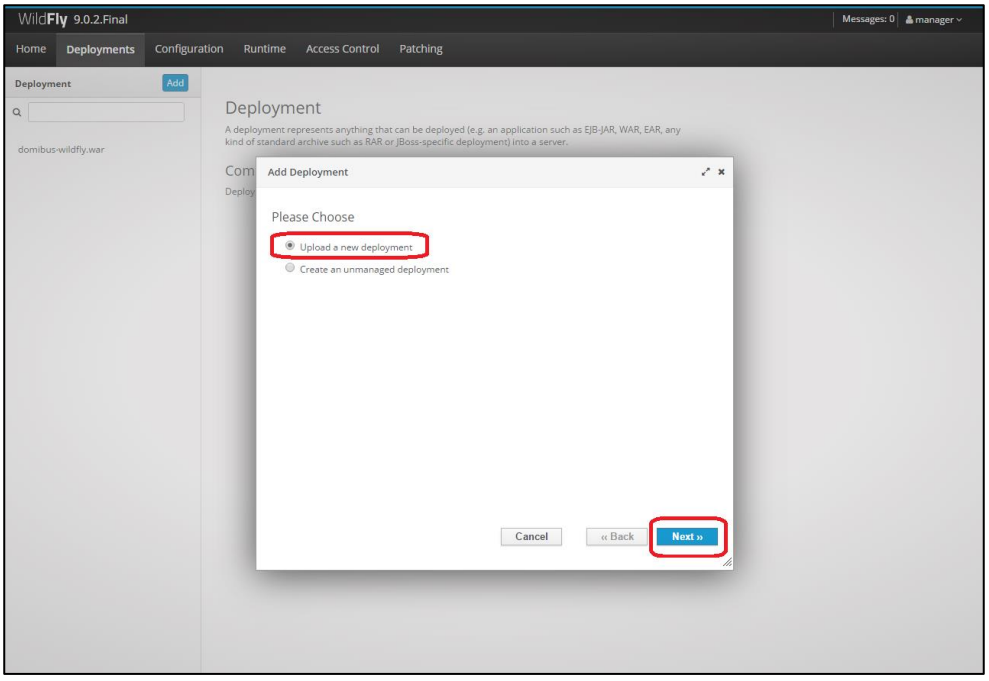
7. Connect to the Admin Console of WildFly at **http://*localhost*:*9990/console***:



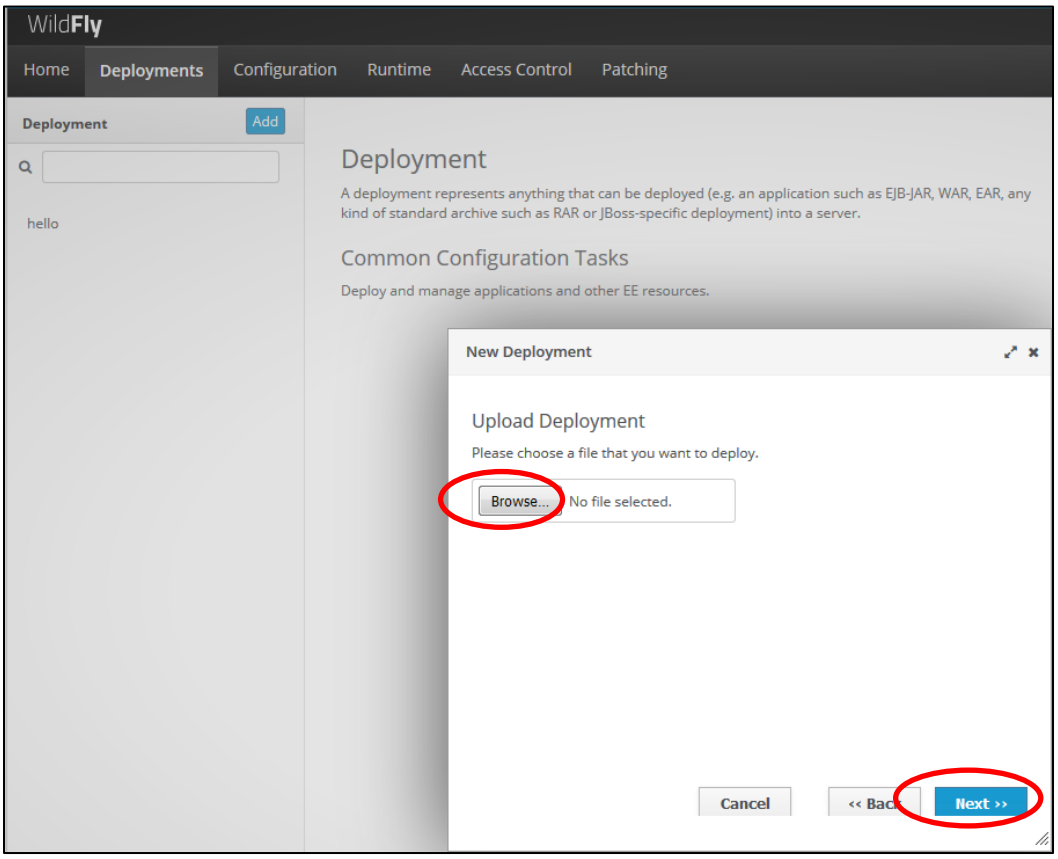
8. Click on **Deployments** in the console menu then click on **Add**:



9. Select **Upload a new deployment** then click **Next**:

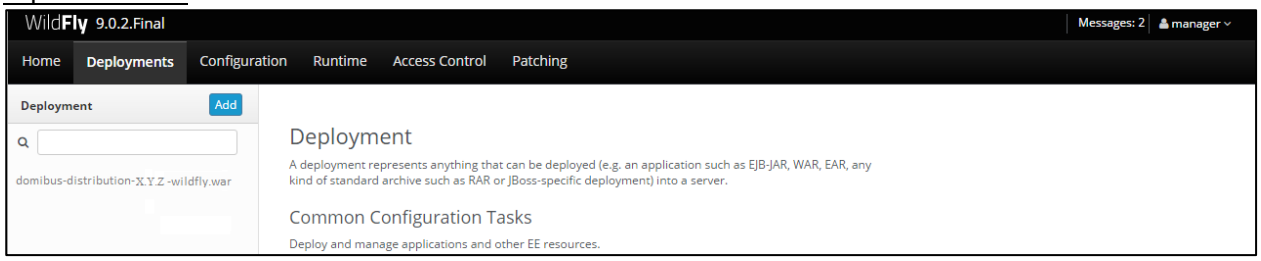


10. Browse to the location of the **domibus-distribution-X.Y.Z-wildfly20.war** file, select it and click **Next** :



11. The deployment is successful when the name of the .war file appears in the Deployment column.

Expected result:



12. In case of WildFly upgrade of single server, you must delete the previously cached version of Domibus.
    Therefore, you must delete the following folders:
    => cef_edelivery_path\standalone\data
    => cef_edelivery_path\standalone\tmp

    Old deployed versions of domibus-distribution-X.Y.Z-wildfly.war also have to be deleted from the path cef_edelivery_path\standalone\deployments or they must be removed via the WildFly Admin Console.

4.4.3. Clustered Deployment

For this step, you will have to use the following resources (see section §3.1–*"Binaries repository"* for the download location):

- **domibus-distribution-X.Y.Z-wildfly20-configuration.zip** (WildFly 20)
- **domibus-distribution-X.Y.Z-wildfly20-war.zip** (WildFly 20)

In this section we assume that the setup of WildFly in domain mode has already been done and that the cluster has been enabled as described in the official documentation. For more details on how to perform an installation of WildFly in domain mode, please refer to the official documentation (cf.[REF4]).

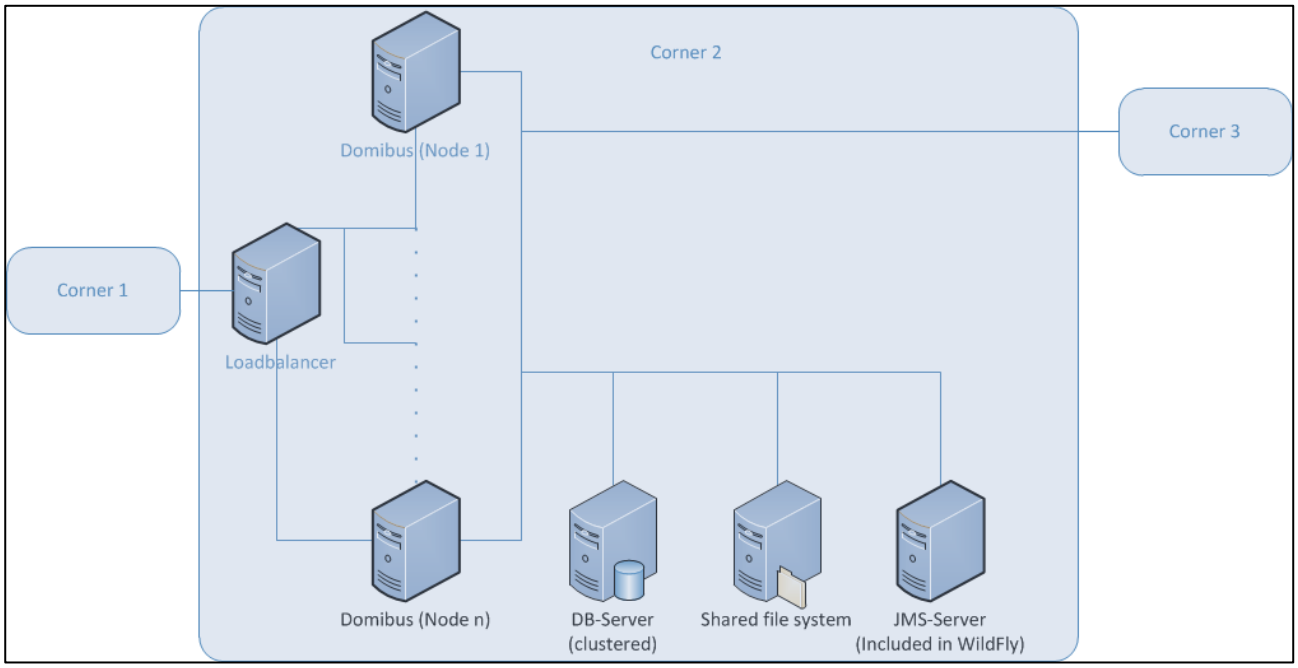


Figure 3 - Diagram representing the Deployment of Domibus in a Cluster on WildFly

In order to install Domibus in a WildFly cluster please follow the steps below:

1. Download and unzip **domibus-distribution-X.Y.Z-wildfly20-configuration.zip** (for WildFly 20) in a shared location that is accessible by all the nodes from the cluster. We will refer to this directory as *cef_shared_edelivery_pat*.

2. Follow steps **2** (MySQL) or **3** (Oracle) from the §4.4.1 – *"Pre-Configured Single Server Deployment"*.

   Remarks:

   - *This step needs to be performed on all the nodes from the cluster*
   - *In the following 2 steps we will edit the profile **full-ha** from the configuration file **domain/configuration/domain.xml** located in the master node*

3. Configure the JMS resources in the configuration file *cef_edelivery_path***/standalone/configuration/standalone-full-ha.xml** by adding the **jms-connection-factories** and **jms-queues**.

```
<subsystem xmlns="urn:jboss:domain:messaging-activemq:3.0">
    <server name="default">
        <management jmx-enabled="true"/>

        <!--default for catch all-->
        <address-setting name="#"
                dead-letter-address="jms.queue.DLQ"
                expiry-address="jms.queue.ExpiryQueue"
                max-size-bytes="10485760"
```

```
            page-size-bytes="2097152"
            message-counter-history-day-limit="10"
            redistribution-delay="1000"/>
        <address-setting name="jms.queue.DomibusSendMessageQueue"
            expiry-address="jms.queue.ExpiryQueue"
            redelivery-delay="1000"
            max-delivery-attempts="1"/>
        <address-setting name="jms.queue.DomibusSendLargeMessageQueue"
            expiry-address="jms.queue.ExpiryQueue"
            redelivery-delay="1000"
            max-delivery-attempts="1"/>
        <address-setting name="jms.queue.DomibusSplitAndJoinQueue"
            expiry-address="jms.queue.ExpiryQueue"
            redelivery-delay="1000"
            max-delivery-attempts="1"/>
        <address-setting name="jms.queue.DomibusPullMessageQueue"
            expiry-address="jms.queue.ExpiryQueue"
            dead-letter-address="jms.queue.DomibusDLQ"
            redelivery-delay="1000"
            max-delivery-attempts="1"/>
        <address-setting name="jms.queue.DomibusPullReceiptQueue"
            expiry-address="jms.queue.ExpiryQueue"
            redelivery-delay="1000"
            max-delivery-attempts="3"/>
        <address-setting name="jms.queue.DomibusRetentionMessageQueue"
            expiry-address="jms.queue.ExpiryQueue"
            redelivery-delay="10000"
            max-delivery-attempts="0"/>
        <address-setting name="jms.queue.DomibusAlertMessageQueue"
            dead-letter-address="jms.queue.DomibusDLQ"
            expiry-address="jms.queue.ExpiryQueue"
            max-delivery-attempts="1"/>
        <address-setting name="jms.queue.DomibusUIReplicationQueue"
            dead-letter-address="jms.queue.DomibusDLQ"
            expiry-address="jms.queue.ExpiryQueue"
            redelivery-delay="10000"
            max-delivery-attempts="1"/>
        <address-setting name="jms.queue.DomibusBusinessMessageOutQueue"
            dead-letter-address="jms.queue.DomibusDLQ"
            expiry-address="jms.queue.ExpiryQueue"
            redelivery-delay="300000"
            max-delivery-attempts="10"/>
        <address-setting name="jms.queue.DomibusNotifyBackendJmsQueue"
            dead-letter-address="jms.queue.DomibusDLQ"
            expiry-address="jms.queue.ExpiryQueue"
            redelivery-delay="300000"
            max-delivery-attempts="10"/>
        <address-setting name="jms.queue.DomibusErrorNotifyConsumerQueue"
            dead-letter-address="jms.queue.DomibusDLQ"
            expiry-address="jms.queue.ExpiryQueue"
            redelivery-delay="300000"
            max-delivery-attempts="10"/>
        <address-setting name="jms.queue.DomibusErrorNotifyProducerQueue"
            dead-letter-address="jms.queue.DomibusDLQ"
            expiry-address="jms.queue.ExpiryQueue"
            redelivery-delay="300000"
            max-delivery-attempts="10"/>
        <address-setting name="jms.queue.DomibusBusinessMessageInQueue"
```

```
                dead-letter-address="jms.queue.DomibusDLQ"
                expiry-address="jms.queue.ExpiryQueue"
                redelivery-delay="300000"
                max-delivery-attempts="10"/>
        <address-setting name="jms.queue.DomibusPluginToBackendQueue"
                dead-letter-address="jms.queue.DomibusDLQ"
                expiry-address="jms.queue.ExpiryQueue"
                redelivery-delay="300000"
                max-delivery-attempts="10"/>
        <address-setting name="jms.queue.DomibusNotifyBackendWebServiceQueue"
                dead-letter-address="jms.queue.DomibusDLQ"
                expiry-address="jms.queue.ExpiryQueue"
                redelivery-delay="300000"
                max-delivery-attempts="10"/>
        <address-setting name="jms.queue.DomibusNotifyBackendFileSystemQueue"
                dead-letter-address="jms.queue.DomibusDLQ"
                expiry-address="jms.queue.ExpiryQueue"
                redelivery-delay="300000"
                max-delivery-attempts="10"/>
        <address-setting name="jms.queue.DomibusUnknownReceiverQueue"
                dead-letter-address="jms.queue.DomibusDLQ"
                expiry-address="jms.queue.ExpiryQueue"
                redelivery-delay="300000"
                max-delivery-attempts="10"/>
        <address-setting name="jms.queue.DomibusNotifyBackendQueue"
                dead-letter-address="jms.queue.DomibusDLQ"
                expiry-address="jms.queue.ExpiryQueue"
                redelivery-delay="300000"
                max-delivery-attempts="10"/>
        <address-setting name="jms.queue.DomibusFSPluginSendQueue"
                expiry-address="jms.queue.ExpiryQueue"
                redelivery-delay="10000"
                max-delivery-attempts="0"/>
        <address-setting name="jms.queue.DomibusClusterCommandTopic"
                dead-letter-address="jms.queue.DomibusDLQ"
                expiry-address="jms.queue.ExpiryQueue"
                redelivery-delay="10000"
                max-delivery-attempts="3"/>
.....
        <connection-factory name="edeliveryConnectionFactory"
                entries="java:/jms/ConnectionFactory"
                discovery-group="dg-group1"
                compress-large-messages="false"
                failover-on-initial-connection="false"
                use-global-pools="true"/>
.....
        <jms-queue name="DomibusBusinessMessageOutQueue"
                entries="java:/jms/domibus.backend.jms.outQueue
java:/jms/queue/DomibusBusinessMessageOutQueue"
                durable="true"/>

        <jms-queue name="DomibusNotifyBackendJmsQueue"
                entries="java:/jms/domibus.notification.jms java:/jms/queue/DomibusNotifyBackendJmsQueue"
                durable="true"/>

        <jms-queue name="DomibusErrorNotifyConsumerQueue"
                entries="java:/jms/domibus.backend.jms.errorNotifyConsumer
java:/jms/queue/DomibusErrorNotifyConsumerQueue"
```

```
                durable="true"/>

        <jms-queue name="DomibusErrorNotifyProducerQueue"
                entries="java:/jms/domibus.backend.jms.errorNotifyProducer
java:/jms/queue/DomibusErrorNotifyProducerQueue"
                durable="true"/>

        <jms-queue name="DomibusBusinessMessageInQueue"
                entries="java:/jms/domibus.backend.jms.inQueue
java:/jms/queue/DomibusBusinessMessageInQueue"
                durable="true"/>

        <jms-queue name="DomibusPluginToBackendQueue"
                entries="java:/jms/domibus.backend.jms.replyQueue
java:/jms/queue/DomibusPluginToBackendQueue"
                durable="true"/>

        <jms-queue name="DomibusSendMessageQueue"
                entries="java:/jms/domibus.internal.dispatch.queue
java:/jms/queue/DomibusSendMessageQueue"
                durable="true"/>

        <jms-queue name="DomibusSendLargeMessageQueue"
                entries="java:/jms/domibus.internal.largeMessage.queue
java:/jms/queue/DomibusSendLargeMessageQueue"
                durable="true"/>

        <jms-queue name="DomibusSplitAndJoinQueue"
                entries="java:/jms/domibus.internal.splitAndJoin.queue
java:/jms/queue/DomibusSplitAndJoinQueue"
                durable="true"/>

        <jms-queue name="DomibusPullMessageQueue"
                entries="java:/jms/domibus.internal.pull.queue java:/jms/queue/DomibusPullMessageQueue"
                durable="true"/>

        <jms-queue name="DomibusPullReceiptQueue"
                entries="java:/jms/domibus.internal.pull.receipt.queue
java:/jms/queue/DomibusPullReceiptQueue"
                durable="true"/>

        <jms-queue name="DomibusRetentionMessageQueue"
                entries="java:/jms/domibus.internal.retentionMessage.queue
java:/jms/queue/DomibusRetentionMessageQueue"
                durable="true"/>

        <jms-queue name="DomibusAlertMessageQueue"
                entries="java:/jms/domibus.internal.alert.queue java:/jms/queue/DomibusAlertMessageQueue"
                durable="true"/>

        <jms-queue name="DomibusUIReplicationQueue"
                entries="java:/jms/domibus.internal.ui.replication.queue
java:/jms/queue/DomibusUIReplicationQueue"
                durable="true"/>

        <jms-queue name="DomibusNotifyBackendWebServiceQueue"
                entries="java:/jms/domibus.notification.webservice
java:/jms/queue/DomibusNotifyBackendWebServiceQueue"
```

```
                durable="true"/>

        <jms-queue name="DomibusNotifyBackendFileSystemQueue"
                entries="java:/jms/domibus.notification.filesystem
java:/jms/queue/DomibusNotifyBackendFileSystemQueue"
                durable="true"/>

        <jms-queue name="DomibusUnknownReceiverQueue"
                entries="java:/jms/domibus.internal.notification.unknown
java:/jms/queue/DomibusUnknownReceiverQueue"
                durable="true"/>

        <jms-queue name="DomibusNotifyBackendQueue"
                entries="java:/jms/domibus.internal.notification.queue
java:/jms/queue/DomibusNotifyBackendQueue"
                durable="true"/>

        <jms-queue name="DomibusFSPluginSendQueue"
                entries="java:/jms/domibus.fsplugin.send.queue java:/jms/queue/DomibusFSPluginSendQueue"
                durable="true"/>

        <jms-queue name="DLQ"
                entries="java:/jms/domibus.DLQ java:/jms/queue/DomibusDLQ"
                durable="true"/>

        <jms-topic name="DomibusClusterCommandTopic"
                entries="java:/jms/domibus.internal.command
java:/jms/topic/DomibusClusterCommandTopic"/>
    </server>
</subsystem>
```

Remark:

Please note that the JMX management also has to be enabled so the JMS resources can be monitored in the JMS Monitoring screen.

4. Configure the database dialect as indicated in §4.4.1 point 3 - *Configure the Oracle Database (option 2)*.

5. Configure the environment variables in the file **bin/domain.conf**.

6. Set the domibus.deployment.clustered option to true:

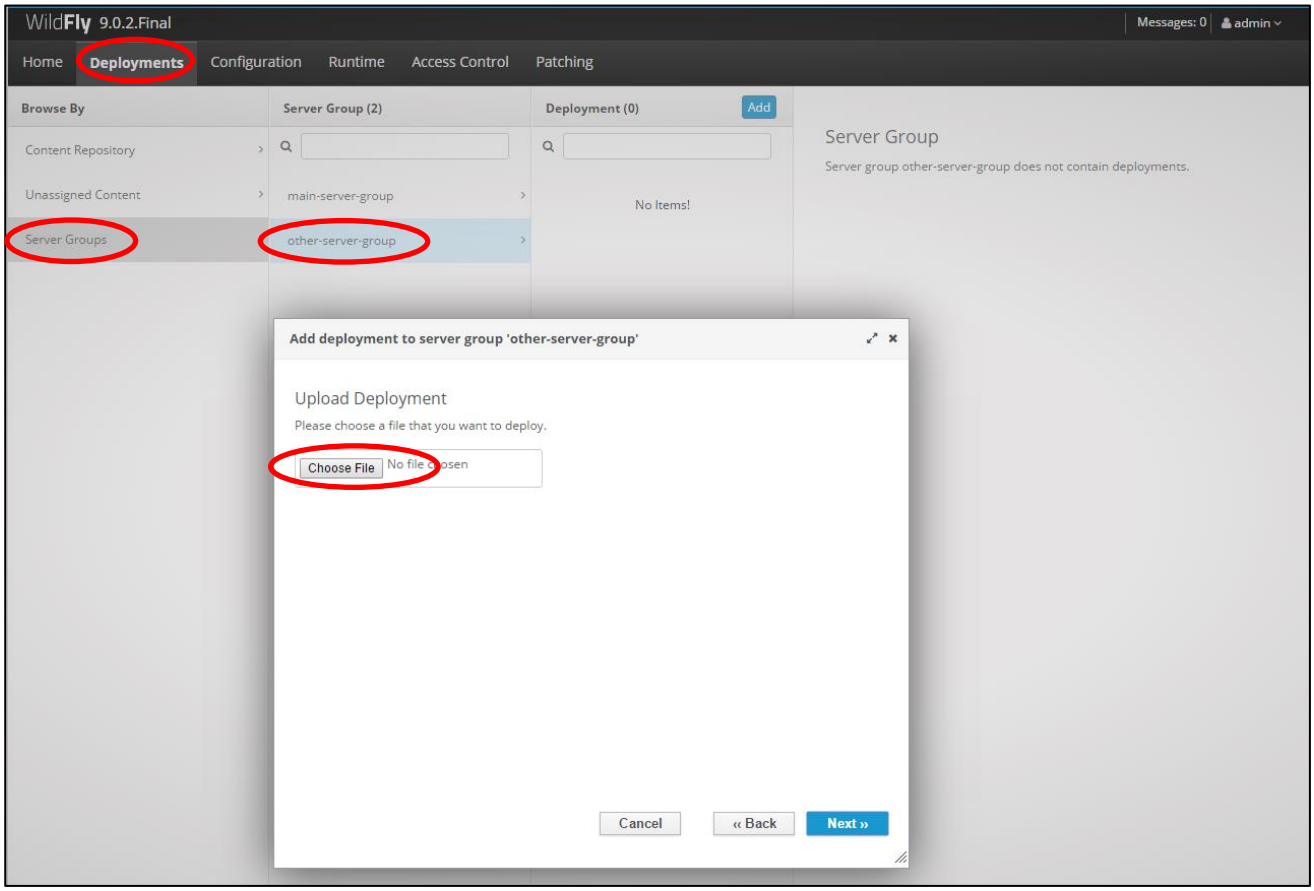
```
domibus.deployment.clustered=true
```

Remark:

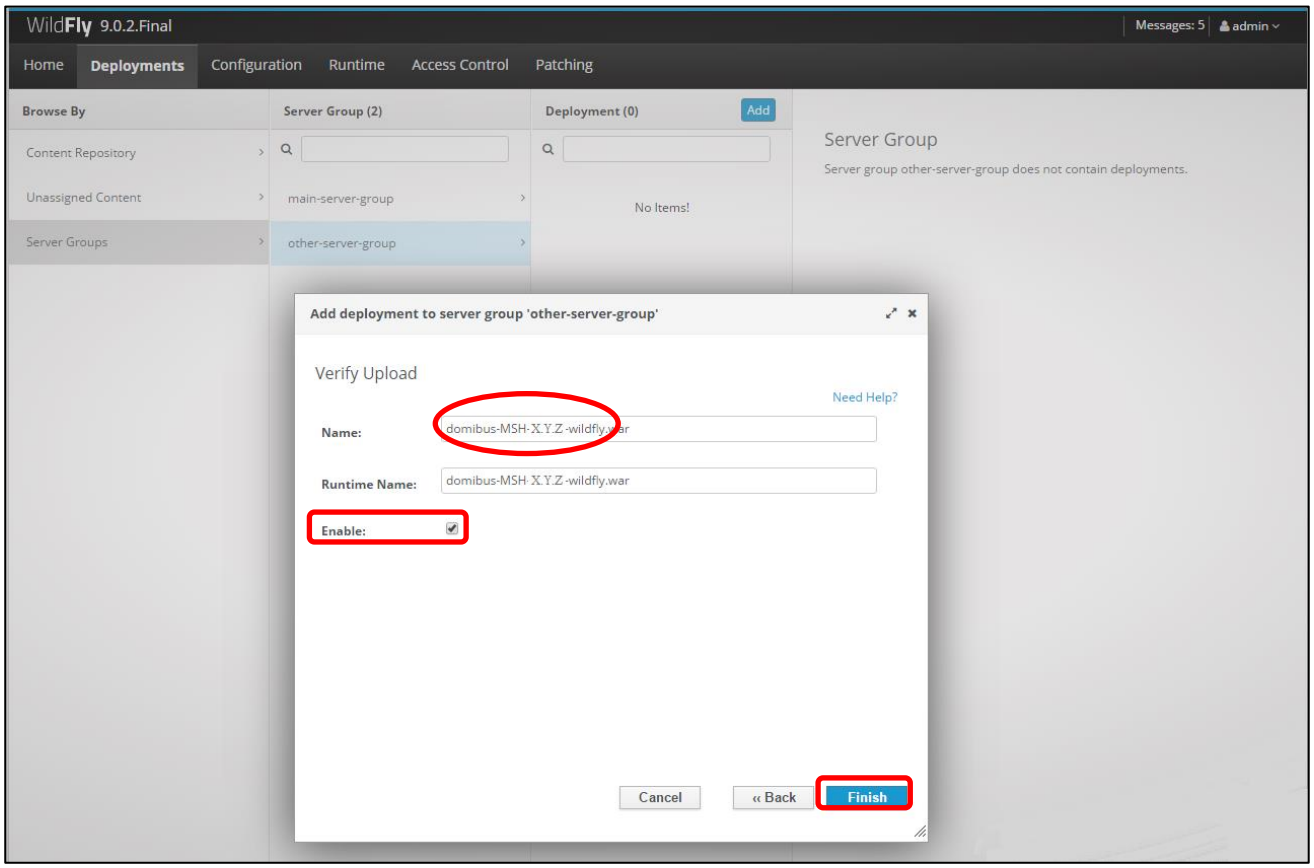
bin/domain.conf is located in each WildFly node. The environment variable setting needs to be performed in every node from the cluster.

```
……
JAVA_OPTS="-Xms128m –Xmx1024m
-java.net.preferIPv4Stack=true"
JAVA_OPTS="$JAVA_OPTS -Ddomibus.config.location=cef_shared_edelivery_path/conf/Domibus -
Djava.io.tmpdir=<path to _tmp directory>"
……
```

7. Deploy the **domibus-distribution-X.Y.Z-wildfly20.war** (for WildFly 20) to the cluster. We will use the WildFly Administration console for performing the deployment. We will deploy the application on the **other-server-group** cluster which is configured step by step in the official documentation (cf.[REF4]).



8. For the upgrade of clustered WildFly server, you must delete the previously cached version of Domibus from the **domain** before adding the new **distribution-X.Y.Z-wildfly.war**.
Make sure to remove all old versions of **domibus-distribution-X.Y.Z-wildfly.war** if you use the WildFly administration console for the deployment.


WildFly 9.0.2.Final
Messages: 5
admin
Home
Deployments
Configuration
Runtime
Access Control
Patching
Browse By
Content Repository
Unassigned Content
Server Groups
Server Group (2)
main-server-group
other-server-group
Deployment (0)
Add
No Items!
Server Group
Server group other-server-group does not contain deployments.
Add deployment to server group 'other-server-group'
Verify Upload
Need Help?
Name:
domibus-MSH-X.Y.Z-wildfly.war
Runtime Name:
domibus-MSH-X.Y.Z-wildfly.war
Enable:
Cancel
« Back
Finish

5. DOMIBUS CONFIGURATION

Domibus exposes the Message Service Handler endpoint as **../services/msh**. Only this endpoint has to be reachable by the other AS4 Access Points and it is typically exposed on the internet.

If the Default WS Plugin (§6.1.2 – *"WS Plugin"*) is deployed, Domibus exposes the Default WS Plugin endpoint as **../services/backend**. This endpoint should ONLY be exposed to the backend client(s) within the trusted zone and it should not be exposed to the internet.

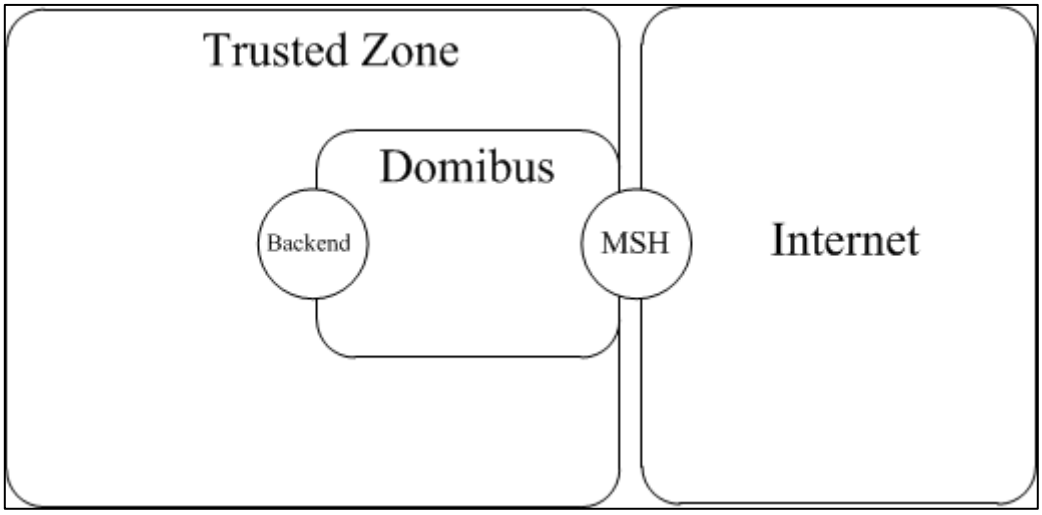


Figure 4 - Message Service Handler diagram

5.1. Security Configuration

5.1.1. Security Policies

The WS-Security policy used by Domibus when exchanging messages can be specified in the PMode configuration file (§7 – *"Pmode Configuration"*).

Security policy assertions are based on the ***WS-Policy framework***.

As requested by the eDelivery AS4 profile, Domibus supports all three mechanisms to reference a security token, as described below.

Domibus distribution includes one policy file for each mechanism (cef_edelivery_path/conf/domibus/policies/):

eDeliveryAS4Policy.xml - Reference to a Subject Key Identifier

The <wsse:SecurityTokenReference> element contains a <wsse:KeyIdentifier> element that specifies the token data by means of a X.509 SubjectKeyIdentifier reference. A subject key identifier MAY only be used to reference an X.509v3 certificate.

eDeliveryAS4Policy_BST.xml - Reference to a Binary Security Token

The <wsse:SecurityTokenReference> element contains a wsse:Reference> element that references a local <wsse:BinarySecurityToken> element or a remote data source that contains the token data itself.

eDeliveryAS4Policy_IS.xml - Reference to an Issuer and Serial Number

The <wsse:SecurityTokenReference> element contains a <ds:X509Data> element that contains a <ds:X509IssuerSerial> element that uniquely identifies an end entity certificate by its X.509 Issuer and Serial Number.

With the **eDeliveryAS4Policy.xml**, Domibus is able to receive messages with **all 3 referencing methods**. When eDeliveryAS4Policy_BST.xml or eDeliveryAS4Policy_IS.xml are used, the specific reference method becomes mandatory on both APs involved in the exchange.

For the connectivity with other APs, the three policies may be combined to obtain the required references for initiator/responder and signing/encryption tokens.

In order to validate a certificate chain contained in incoming messages with DSS (see § 20 - DSS extension configuration), Domibus also supports:

eDeliveryAS4Policy_BST_PKIP.xml - Reference to a Pki Path Binary Security Token

The <wsse:SecurityTokenReference> element contains a wsse:Reference> element that references a local <wsse:BinarySecurityToken> element or a remote data source that contains the token data itself.

With the above policy the entire certificate chain is added to the the Ws-Security header of the AS4 message.

5.1.2. Certificates

The certificates that are used for signing and encrypting the messages when communicating with the other Access Points can be configured in the property file located under *cef_edelivery_path***/conf/domibus*/domibus.properties.***
By default Domibus is pre-configured to use self-signed certificates. Please note that self-signed certificates should be used only for testing purposes and are not intended for production use.

In order to configure Domibus to use custom certificates the following properties need to be modified:

```
#The location of the keystore
domibus.security.keystore.location=${domibus.config.location}/keystores/gateway_keystore.jks
#Type of the used keystore
domibus.security.keystore.type=jks
#The password used to load the keystore
domibus.security.keystore.password=test123

#Private key
#The alias from the keystore of the private key
domibus.security.key.private.alias=blue_gw
#The private key password
domibus.security.key.private.password=test123

#Truststore
#The location of the truststore
domibus.security.truststore.location=${domibus.config.location}/keystores/gateway_truststore.jks
#Type of the used truststore
domibus.security.truststore.type=jks
#The password used to load the trustStore
domibus.security.truststore.password=test123
```

1. Create, if not present, a folder *cef_edelivery_path***/conf/domibus/keystores**.
2. Get your key pair from an external provider.
   - Self-signed certificates should only be used for testing purposes, not production.
   - If you are interested in using the CEF Public Key Infrastructure Solution (cf.[REF5]).
   - For other certificate providers, please refer to the "Guidance on digital certificates used in eDelivery" document (cf.[[REF14]).
3. Create, if not present, the public and private keys containers (e.g. *truststore***.jks** *and keystore***.jks**).
4. Import your private key into your keystore.

Remarks:

- *Your private key and your keystore should always stay secret. Please never share them.*
- *The keystore alias has to be the same as the party*
- *It is strongly recommended to put your key pair (private and public key) and the public key of the other participants you trust in two separate containers.*

5.1.3. Default authorization

When a message is received by Domibus MSH, the default authorization service performs authorization checks on the signing certificate: the certificate that was used to sign either the UserMessage or the SignalMessage (for PullRequests).

On other words, the validations are performed by the receiving AP on the sender's certificate for a UserMessage and on the initiator's certificate for a PullRequest.

There are 3 checks that can be enabled/disabled independently.

domibus.sender.trust.validation.truststore_alias: this check verifies that the sender's certificate matches the certificate stored in the truststore. The certificate is loaded from the truststore based on the alias (party name). By default is set to true.

With this check, it is ensured that when Domibus is configured to receive from multiple parties, these parties cannot impersonate each other.

Example: red_gw is configured to receive from both blue_gw and green_gw. Without this check enabled, blue_gw can sign with its own certificate (which is accepted by the receiving AP) but pretend it is green_gw.

domibus.sender.trust.validation.expression: when this property is not empty, Domibus will verify, before receiving a message, if the subject of the sender's certificate matches the regular expression. By default it is empty, therefore no check is performed.

This property is mainly meant for chain of certificates, where sender's certificate is signed by a certificate authority and the leaf certificate is not present in the truststore of the receiving AP.

domibus.sender.certificate.subject.check: this check verifies that the subject of the sender's certificate contains the alias (party name). Because this check is very restrictive, it is set by default to false.

In addition to these 3 properties, the property **domibus.sender.trust.validation.onreceiving**, when set to false, completely disables the authorization (as well as the certificate validation – valid/expired/revoked).

5.2. Domibus Properties

The table below details the properties defined in the property file *cef_edelivery_path***/conf/domibus/domibus.properties** that can be used to configure Domibus.

Note: All the properties which are commented are considered as default values. Domibus takes into account all the commented default values on start up. If you want to modify the default value of a property, then you must uncomment it and change it to the desired value.

Configuration Property	Default value	Purpose
domibus.database.general.schema	general_schema	Multitenancy only: Schema used by Domibus to configure the association of users to domains, the super users and other things that are not related to a specific domain. This property is mandatory for Multitenancy mode.
domibus.msh.messageid.suffix	domibus.eu	This Property is used to generate the random Message id with a fixed suffix which is set by default to "domibus.eu". The resulting format will be UUID@$domibus.msh.messageid.suffix. This property is mandatory.
domibus.msh.retry.messageExpirationDelay	5000	The retry strategy grants a few extra seconds to avoid not sending the last attempt (value in miliseconds, default 5000).
domibus.msh.retry.cron	0/5 * * * * ?	It is the retry cron job to send the messages. It is set by default to every 5 seconds. This property is mandatory.

Configuration Property	Default value	Purpose
domibus.dispatch.ebms.error.unrecoverable.retry	true	This property should be set to true if Domibus needs to retry sending the failed messages. This property is mandatory
domibus.smlzone	acc.edelivery.tech.ec.europa.eu	Set the SMLZone if Domibus needs to be used under Dynamic discovery model. This property is only mandatory if an SML is used.
domibus.dynamicdiscovery.useDynamicDiscovery	false	Whether dynamic discovery is used or not.
domibus.dynamicdiscovery.client.specification	OASIS	The property specifies the dynamic discovery client to be used for the dynamic process. Possible values: OASIS and PEPPOL.
domibus.dynamicdiscovery.peppolclient.mode	TEST	This information is passed to the PEPPOL client that needs to know whether the usage is for PRODUCTION or TESTING mode.
domibus.dynamicdiscovery.oasisclient.regexCertificateSubjectValidation		Apart from validating response of signer certificates against the truststore, the Oasis Dynamic Discovery Client gives the possibility to add (optional) a regular expression to validate any certificate metadata related to the subject of the signer certificate. Example: domibus.dynamicdiscovery.oasisclient.regexCertificateSubjectValidation=”^.*$”.or"^.*EHEALTH_SMP.*$"
domibus.dynamicdiscovery.peppolclient.regexCertificateSubjectValidation	.*	Apart from validating the response of the signer certificates against the truststore, the Peppol Dynamic Discovery Client gives the possibility to add (optional) a regular expression to validate the subject of the SMP signer certificate when only the issuer chain is added to the truststore.
domibus.dynamicdiscovery.partyid.responder.role	http://docs.oasis-open.org/ebxml-msg/ebms/v3.0/ns/core/200704/responder	The role of the responder PartyId may be defined here for both PEPPOL and OASIS
domibus.dynamicdiscovery.partyid.type	urn:oasis:names:tc:ebcore:partyid-type:unregistered	The type of the PartyId may be defined here (default values are: urn:fdc:peppol.eu:2017:identifiers:ap for PEPPOL and urn:oasis:names:tc:ebcore:partyid-type:unregistered for OASIS)
domibus.dynamicdiscovery.transportprofileas4	bdxr-transport-ebms3-as4-v1p0	The AS4 transport profile by which the endpoint is identified in the SMP response. In PEPPOL the latest value is peppol-transport-as4-v2_0

Configuration Property	Default value	Purpose
domibus.jms.queue.pull	domibus.internal.pull.queue	Domibus internal queue used for dispatching the pull requests
domibus.deployment.clustered	false	If true the quartz scheduler jobs are clustered. This property is mandatory, it should be set to true if the deployment of Domibus is done in a cluster.
messageFactoryClass		The factory for creating SOAPMessage objects Default values - Tomcat/WebLogic: com.sun.xml.internal.messaging.saaj.soap.ver1_2.SOAPMessageFactory1_2Impl - WildFly: com.sun.xml.messaging.saaj.soap.ver1_2.SOAPMessageFactory1_2Impl
domibus.plugin.notification.active	true	If disabled, Domibus will not notify the plugins when the state of the User Message changes. Defaults to true.
domibus.nonrepudiation.audit.active	true	If disabled, Domibus will not save the non-repudiation audit data. Defaults to true.
domibus.jms.internal.command.concurrency	1-1	Concurrency configured for executing internal commands.
domibus.plugin.notification.active	true	If disabled, Domibus will not notify the plugins when the state of the User Message changes. Default is true.
domibus.nonrepudiation.audit.active	true	If disabled, Domibus will not save the non-repudiation audit data. Default is true.
domibus.jms.internal.command.concurrency	1-1	Concurrency configured for executing internal commands.
domibus.dispatcher.allowChunking	true	Allows chunking when sending messages to other Access Points.
domibus.dispatcher.chunkingThreshold	104857600	If domibus.dispatcher.allowChunking is true, this property sets the threshold at which messages start getting chunked (in bytes). Messages under this limit do not get chunked. Defaults to 100 MB.
domibus.dispatcher.concurency	5-20	Specify concurrency limits via a "lower-upper" String, e.g. "5-10", or a simple upper limit String, e.g. "10" (the lower limit will be 1 in this case) when sending messages to other Access Points.

Configuration Property	Default value	Purpose
domibus.dispatcher.largeFiles.concurrency	1	Specify concurrency limits via a "lower-upper" String, e.g. "5-10", or a simple upper limit String, e.g. "10" (the lower limit will be 1 in this case) when sending large messages(SplitAndJoin) to other Access Points
domibus.dispatcher.connection.keepAlive	true	Specifies if the connection will be kept alive between C2 and C3. Default value is false.
domibus.msh.pull.cron	0 0 0/1 * * ?	Cron expression used for configuring the message puller scheduling. Format: Sec Min Hour Day Month weekday Year. The example shown is running every hour
domibus.pull.queue.concurency	1-1	Number of threads used to parallelize the pull requests.
domibus.pull.request.send.per.job.cycle	1	Number of pull requests executed every cron cycle.
domibus.pull.receipt.queue.concurrency	1-1	Number of threads used to parallelize the sending of pull receipts.
domibus.pull.request.frequency.recovery.time	0	#Time in second for the system to recover its full pull capacity when job schedule is one execution per second. #If configured to 0, no incremental frequency is executed and the pull pace is executed at its maximum.
domibus.pull.retry.cron	0/10 * * * * ?	#Pull Retry Worker execution interval as a cron expression
domibus.pull.dynamic.initiator	false	#Allow dynamic initiator on pull requests - 0 or multiple initiators are allowed in the Pmode process
domibus.pull.multiple_legs	false	#Allow multiple legs configured on the same pull process (with the same security policy)
domibus.pull.force_by_mpc	true	#Force message into READY_TO_PULL when mpc attribute is present
domibus.pull.mpc_initiator_separator	PID	#Mpc initiator separator. This is used when the mpc provides information on the initiator: baseMpc/SEPARATOR/partyName
domibus.retentionWorker.cronExpression	0 0/1 * * * ?	Cron expression used for configuring the retention worker scheduling. The retention worker deletes the expired messages (downloaded and not-downloaded).

Configuration Property	Default value	Purpose
domibus.retentionWorker.message.retention.downloaded.max.delete	50	This property is used to tweak the maximum downloaded messages to be deleted by the retention worker.
domibus.retentionWorker.message.retention.not_downloaded.max.delete	50	This property is used to tweak the maximum not-downloaded messages to be deleted by the retention worker.
Domibus.rentetionWorker.deletion.strategy	DEFAULT	This property defines the message deletion strategy. The possible values are DEFAULT and STORED_PROCEDURE. The deletion strategy STORED_PROCEDURE is only available on Oracle. When using the STORE_PROCEDURE, the entire message is deleted, regardless of any other configuration in the pMode. This includes the message metadata and message payload (assuming the payload was persisted in the database).
domibus.retentionWorker.deletion.jobs.timeout	1200 seconds	Timeout for the user message deletion job. Only used when deletion strategy is STORED_PROCEDURE
domibus.retentionWorker.deletion.jobs.number	2	Number of jobs running stored procedures in the database in parallel. Only used when deletion strategy is STORED_PROCEDURE
domibus.retentionWorker.deletion.jobs.interval	1440	The interval in minutes between start and end of a deletion job. Defaults to one day. All deletion jobs will delete messages within one interval, apart from the last one which covers all of the remaining. Only used when deletion strategy is STORED_PROCEDURE
domibus.retention.jms.concurrency	5-10	Specify concurrency limits via a "lower-upper" string, e.g. "5-10", or a simple upper limit string, e.g. "10" (the lower limit will be 1 in this case), when deleting messages. This property is only used when Deletion Strategy is DEFAULT.
domibus.retentionWorker.message.retention.batch.delete	1000	Maximum number of messages to be deleted by the retention worker in a bulk delete (when not specified in the pMode MPC). Default set to 1000, maximum allowed when using Oracle database. This property is only used when the deletion strategy is DEFAULT.

Configuration Property	Default value	Purpose
domibus.attachment.storage.location	-	It is possible to configure Domibus to save the message payloads on the file system instead of the database. This setting is recommended when exchanging payloads bigger than 30MB. In order to enable the file system storage please add the following property: domibus.attachment.storage.location= *your_file_system_location* where *your_file_system_location* is the location on the file system where the payloads will be saved. Remark: In a cluster configuration the file system storage needs to be accessible by all the nodes from the cluster. your_file_system_location. (User should provide absolute path of 'your_file_system_location' . Relative path of payload storage is forbidden in domibus.) Please note that \\ \' and \" must be escaped in domibus.properties file. So in 'your_file_system_location' please use '/ '.
domibus.taskExecutor.threadCount	50	Tomcat only: customize the task executor threads count.
domibus.mshTaskExecutor.threadCount	100	Property to customize the msh endpoint task executor threads count. Defaults to 100.
domibus.jmx.user	jmsManager	WebLogic specific: the user that will be used to access the queues via JMX.
domibus.jmx.password	jms_Manager1	WebLogic specific: the associated password of the configured domibus.jmx.user.

Configuration Property	Default value	Purpose
domibus.sendMessage.messageIdPattern	^[\\x20-\\x7E]*$	When an initiator backend client submits messages to Domibus for transmission, with the message id field populated, then the message id should be RFC2822 compliant. The pattern specified here ensures this validation. This field is optional. In case the existing client does not match this message id pattern during submission, then this property can be omitted to skip the validation.
domibus.listPendingMessages.maxCount	10000 for Tomcat 500 for WildFly and Weblogic	This property specifies the maximum number of messages that would be served when the 'listPendingMessages' operation is invoked. Setting this property is expected to avoid timeouts due to huge result sets being served. A value of 0 would return all the pending messages. This property is optional. Omitting this property would default the resultset size to 500. Note: For Tomcat server, the maximum number of shown messages in queue monitoring is defined by the 'domibus.listPendingMessages.maxCount' property.
domibus.jms.queue.maxBrowseSize	10000	The maximum number of messages to be listed from the JMS queues. Setting this property is expected to avoid timeouts due to huge results being served. Setting this property to zero returns all messages.
domibus.jms.queue.alert	domibus.internal.alert.queue	Domibus internal queue used for alerts.
domibus.jms.internalQueue.expression	.*domibus\.(internal|DLQ|backend\.jms|notification\.jms|notification\.webservice|notification\.kerkovi|notification\.filesystem).*	Regular expression used for identifying the internal queues in the Admin Page.
domibus.jms.connectionFactory.session.cache.size	1	Desired size for the JMS Session cache.

Configuration Property	Default value	Purpose
domibus.fourcornermodel.enabled	true	This property affects the GUI search and behaviour. If the property is set to false, 'Final Recipient' and 'Original Sender' criteria disappear from Messages Filter, Messages column picker and from Message details in the GUI. The internal SQL queries for User and Signal Message do not use TB_PROPERTY.NAME = 'finalRecipient' and 'originalSender' anymore.
domibus.userInput.blackList	'\u0022(){}[];,+=%&*#<>/\\	Characters that are not accepted for user input in admin console.
domibus.internal.queue.concurency	3-10	Number of threads used to parallelize the dispatching of messages to the plugins.
domibus.logging.ebms3.error.print	true	Prints the raw XML response in the logs in case of EBMS3 error on receiver/sender side (if eu.domibus is put at least on ERROR).
domibus.logging.payload.print	false	Prints the AS4 payload in the logs while org.apache.cxf is set to at least INFO in logback.xml. Defaults to false.
domibus.logging.metadata.print	true	Prints the AS4 metadata in the logs when org.apache.cxf is set to at least INFO in logback.xml. Defaults to true.
domibus.property.length.max	10000	The maximum length accepted for a property value, in bytes. Defaults to 10000.
domibus.userInput.whiteList		Characters that are accepted in user input
domibus.internal.queue.concurency	3-10	Number of threads used to parallelize the dispatching of messages to the plugins.
domibus.property.validation.enabled	true	Enables the validation of domibus properties values (default to true).
domibus.logging.payload.print	false	Prints the AS4 payload in the logs while org.apache.cxf is set to at least INFO in logback.xml. Defaults to false.
domibus.logging.metadata.print	true	Prints the AS4 metadata in the logs when org.apache.cxf is set to at least INFO in logback.xml. Defaults to true.
domibus.logging.cxf.limit	18000	The size limit at which messages are truncated in the logs when org.apache.cxf is set to at least INFO in logback.xml Number between 0 and 1000000000 bytes. Default to limit is 6000 bytes.
domibus.file.upload.maxSize	10000000	The maximum file size in bytes that can be uploaded through REST (PMode, trustStore).

Configuration Property	Default value	Purpose
domibus.instance.name	Domibus	Domibus instance/environment name.
domibus.dispatcher.connectionTimeout	240000	For connection between the access points – C2 & C3. Specifies the amount of time, in milliseconds, that the consumer will attempt to establish a connection before it times out. 0 is infinite.
domibus.dispatcher.receiveTimeout	240000	For connection between the access points – C2 & C3. Specifies the amount of time, in milliseconds, that the consumer will wait for a response before it times out. 0 is infinite.
domibus.dispatcher.cacheable	true	Cache the dispatcher clients used for communication between the access points.
domibus.sendMessage.failure.delete.payload	false	Whether to delete the message payload or send failure. Defaults to false (the admin could put the message back in the send queue).
domibus.sendMessage.success.delete.payload	true	Whether to delete the message payload on send success. Default set to true (to preserve backwards compatibility).
domibus.sendMessage.attempt.audit.active	true	If disabled, Domibus will not save the message attempt details when there is a failure sending a message. Defaults to true.
domibus.auth.unsecureLoginAllowed	true	The property specifies if authentication is required or not.
compressionBlacklist	application/vnd.etsi.asic-s+zip,image/jpeg	The list of mime-types that will not be compressed (in outgoing messages) even if compression is turned on for the given message.
domibus.security.keystore.location	${domibus.config.location}/keystores/gateway_keystore.jks	The location of the keystore.
domibus.security.keystore.type	jks	The type of the used keystore.
domibus.security.keystore.password	test123	The password used to load the keystore. Accepted characters are: !\"#$%&\'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\\]^_`abcdefghijklmnopqrstuvwxyz{|}~ Please note that \\ \' and \" must be escaped in domibus.properties file.

Configuration Property	Default value	Purpose
domibus.security.key.private.alias	blue_gw	The alias from the keystore of the private key. Accepted characters are: !\"#$%&\'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\\]^_`abcdefghijklmnopqrstuvwxyz{|}~ Please note that \\ \' and \" must be escaped in domibus.properties file.
domibus.security.key.private.password	test123	The private key password.
domibus.security.truststore.location	${domibus.config.location}/keystores/gateway_truststore.jks	The location of the truststore.
domibus.security.truststore.type	jks	The type of the used keystore.
domibus.security.truststore.password	test123	The password used to load the trustStore. Accepted characters are: !\"#$%&\'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\\]^_`abcdefghijklmnopqrstuvwxyz{|}~ Please note that \\ \' and \" must be escaped in domibus.properties file.
domibus.entityManagerFactory.packagesToScan	eu.domibus	Packages to be scanned (comma separated) by the EntityManagerFactory.
domibus.entityManagerFactory.jpaProperty.hibernate.connection.driver_class		The JDBC driver class used for connecting to the database.
domibus.entityManagerFactory.jpaProperty.hibernate.dialect		This property makes Hibernate generate the appropriate SQL for the chosen database.
domibus.entityManagerFactory.jpaProperty.hibernate.format_sql	true	Pretty print the SQL in the log and console.
domibus.entityManagerFactory.jpaProperty.transaction.factory_class		The classname of a TransactionFactory to use with Hibernate Transaction API.
domibus.entityManagerFactory.jpaProperty.hibernate.transaction.manager_lookup_class		The classname of the TransactionManagerLookup.
com.atomikos.icatch.output_dir	${domibus.work.location:${domibus.config.location}}/work/transactions	Tomcat only: Specifies the directory in which to store the debug log files for Atomikos.
com.atomikos.icatch.log_base_dir	${domibus.work.location:${domibus.config.location}}/work/transactions/log	Tomcat only: Specifies the directory in which the log files should be stored.
com.atomikos.icatch.default_jta_timeout	60000	Tomcat only: The default timeout for JTA transactions.

Configuration Property	Default value	Purpose
com.atomikos.icatch.max_timeout	300000	Tomcat only: The default transaction max timeout for JTA transactions.
com.atomikos.icatch.max_actives	100	The maximum number of active transactions.
domibus.jms.XAConnectionFactory.maxPoolSize	100	Tomcat only: The max pool size of the JMS connection factory.
activeMQ.broker.host	localhost	Tomcat only: The host of the JMS broker.
activeMQ.brokerName	localhost	Tomcat only: The name of the JMS broker.
activeMQ.embedded.configurationFile	file:///${domibus.config.location}/internal/activemq.xml	Tomcat only: The configuration file of the embedded ActiveMQ broker. In case an external broker is used this property is not needed and it should be deleted from the property file.
activeMQ.JMXURL	service:jmx:rmi:///jndi/rmi://${activeMQ.broker.host}:${activeMQ.connectorPort}/jmxrmi	Tomcat only: The service URL of the MBeanServer.
activeMQ.connectorPort	1199	Tomcat only: The port that the JMX connector will use for connecting to ActiveMQ.
activeMQ.transportConnector.uri	tcp://${activeMQ.broker.host}:61616	Tomcat only: The connection URI that the clients can use to connect to an ActiveMQ broker using a TCP socket.
activeMQ.username	domibus	Tomcat only: The username that is allowed to connect to the ActiveMQ broker.
activeMQ.password	changeit	Tomcat only: The password of the username defined in the **activeMQ.username** property.
activeMQ.persistent	true	The persistence enabled flag
domibus.datasource.xa.xaDataSourceClassName	com.mysql.jdbc.jdbc2.optional.MysqlXADataSource	Tomcat only (XA datasource): The fully qualified underlying XADataSource class name.
domibus.datasource.xa.maxLifetime	60	Tomcat only (XA datasource): Sets the maximum amount of seconds that a connection is kept in the pool before it is destroyed automatically.
domibus.datasource.xa.minPoolSize	5	Tomcat only (XA datasource): Sets the minimum pool size. The amount of pooled connections will not go below this value. The pool will open this amount of connections during initialization.

Configuration Property	Default value	Purpose
domibus.datasource.xa.maxPoolSize	100	Tomcat only (XA datasource): Sets the maximum pool size. The amount of pooled connections will not go above this value.
domibus.database.serverName	localhost	Tomcat only (XA datasource): The host name or the IP address of the database server.
domibus.database.port	3306	Tomcat only (XA datasource): The port number of the database server.
domibus.datasource.xa.property.user	edelivery_user	Tomcat only (XA datasource): A user who has access to the Domibus database schema.
domibus.datasource.xa.property.password	edelivery_password	Tomcat only (XA datasource): The password of the user defined in the **domibus.datasource.xa.property.user** property.
domibus.database.schema	domibus_schema	Tomcat only: the Domibus database schema
domibus.datasource.xa.property.url	jdbc:mysql://${domibus.database.serverName}:${domibus.database.port}/domibus_schema?pinGlobalTxToPhysicalConnection=true	Tomcat only (XA datasource): The JDBC URL connection. It re-uses the properties for the user and password defined above.
domibus.datasource.driverClassName	com.mysql.jdbc.Driver	Tomcat only (Non-XA datasource): the JDBC driver class name.
domibus.datasource.url	jdbc:mysql://localhost:3306/domibus_schema?useSSL=false	Tomcat only (Non-XA datasource): The JDBC URL connection.
domibus.datasource.user	edelivery_user	Tomcat only (Non-XA datasource): A user who has access to the Domibus database schema.
domibus.datasource.password	edelivery_password	Tomcat only (Non-XA datasource): The password of the user defined in the **domibus.datasource.user** property.
domibus.receiver.certificate.validation.onsending	true	If activated Domibus will verify before sending a User Message if the receiver's certificate is valid and not revoked. If the receiver's certificate is not valid or it has been revoked Domibus will not send the message and it will mark it as SEND_FAILURE
domibus.sender.certificate.validation.onsending	true	If activated Domibus will verify before sending a User Message if his own certificate is valid and not revoked. If the certificate is not valid or it has been revoked, Domibus will not send the message and it will mark it as SEND_FAILURE (default is true)

Configuration Property	Default value	Purpose
domibus.sender.certificate.validation.onreceiving	true	If activated Domibus will verify before receiving a User Message if the sender's certificate is valid and not revoked. If the certificate is not valid or it has been revoked, Domibus will not accept the message (default is true)
domibus.sender.trust.validation.onreceiving	true	Enable/disable both the authorization and the validation checks on the sender's certificate. When set to false, none of the other checks on the sender's certificate are performed.
domibus.sender.trust.validation.truststore_alias	true	Check that sender's certificate matches the certificate stored in the truststore. The certificate is loaded from the truststore based on the alias (party name).
domibus.sender.trust.validation.expression	Empty (no regular expression)	When this property is not empty, Domibus will verify, before receiving a message, if the subject of the sender's certificate matches the regular expression.
domibus.sender.certificate.subject.check	false	Check that the subject of the sender's certificate contains the alias (party name). Because this check is very restrictive, it is set by default to false.
domibus.console.login.maximum.attempt	5	Maximum connection attempts before the account gets locked (suspended).
domibus.console.login.suspension.time	3600	Property defining how many minutes the account remains locked (suspended) before it is automatically unlocked by the system.
domibus.account.unlock.cron	0 0/1 * * * ?	Cron job that determines the interval at which the system checks for account to be reactivated.
domibus.certificate.revocation.offset	15	When a certificate is about to expire, the system will log a warning. The warning will appear as from the expiration date minus the offset in days.
domibus.certificate.check.cron	0 0 0/1 * * ?	Cron expression that specifies the frequence of the certificate revocation check.
Plugin User Security		Properties for configuring plugin users security policy
domibus.plugin.login.maximum.attempt	5	Plugin user security property: number of console login attempt before the user is deactivated (default 5)
domibus.plugin.login.suspension.time	3600	Plugin user security property: time in seconds for a suspended plugin user to be reactivated. (1 hour per default if property is not set, if 0 the user will not be reactivated)

Configuration Property	Default value	Purpose
domibus.plugin.account.unlock.cron	0 0/1 * * * ?	Plugin user security property: cron job that determines the interval at which the system checks for plugin account to be reactivated.
domibus.certificate.crl.excludedProtocols		The list of protocols to be excluded from CRL list (possible values: http, https, ftp, file, ldap, etc)
domibus.UI.title.name	Domibus	Property where you can specify the title in the Tab of Admin Console
domibus.ui.pages.messageLogs.countLimit	50000	The limit when calculating the number of message logs(disabled when 0)
domibus.jms.queue.ui.replication	domibus.internal.ui.replication.queue (Tomcat) or jms/ domibus.internal.ui.replication.queue for Weblogic/Wildfly	JNDI name of the UI replication queue. Value is different per type of server
domibus.ui.replication.sync.cron	0 0 2 * * ?	Cron job (run every day at 2 AM) to check any unsynchronized data between native tables and TB_MESSAGE_UI table
domibus.ui.replication.sync.cron.max.rows	10000	Max number of rows which will be processed by the UI replication cron job – otherwise the REST resource must be called
domibus.ui.replication.wait.before.update	200	Time to wait (in milliseconds) before performing the update synchronization of each row. Reducing below 200 could lead in some desynchronization issues

Configuration Property	Default value	Purpose
Proxy Settings		In case your Access Point has to use a proxy server you can configure it with these properties.
domibus.proxy.enabled	false	Values “true”/”false”, depending on whether you need to use proxy or not.
domibus.proxy.http.host	-	Host name of the proxy server.
domibus.proxy.http.port	-	Port of Proxy server
domibus.proxy.user	-	Username for authentication on the proxy server.
domibus.proxy.password	-	Password.
domibus.proxy.nonProxyHosts	-	Indicates the hosts that should be accessed without going through the proxy.
domibus.alert.sender.smtp.url		Smtp server URL for sending alert.

Configuration Property	Default value	Purpose
domibus.alert.sender.smtp.port		Smtp server port.
domibus.alert.sender.smtp.user		Smtp server user.
domibus.alert.sender.smtp.password		Smtp server user password.
domibus.alert.sender.email		Alert sender email.
domibus.alert.receiver.email		Alert email receiver. You can specify multiple recipients by using semicolon separated email addresses: name1@gmail.com;name2@gmail.com
domibus.alert.cleaner.cron	0 0 0/1 * * ?	Cron configuration for cleaning alerts.
domibus.alert.cleaner.alert.lifetime	20	Lifetime in days of alerts before cleaning.
domibus.alert.active	true	Enable/disable the entire alert module.
domibus.alert.mail.sending.active	false	Allow to disable alert mail sending.
domibus.alert.mail.smtp.timeout	5000	SMTP Socket I/O timeout value in milliseconds
domibus.alert.queue.concurrency	1	Concurrency to process the alerts.
domibus.alert.retry.cron	0 0/1 * * * ?	Frequency of failed alerts retry.
domibus.alert.retry.time	1	Elapsed time in minutes between alert retry.
domibus.alert.retry.max_attempts	2	Maximum number of attempts for failed alerts+
domibus.alert.msg.communication_failure.active	true	Enable/disable the messaging alert module.
domibus.alert.msg.communication_failure.states	SEND_FAILURE	Message status change that should be notified by the messaging alert module. Comma separated.

Configuration Property	Default value	Purpose
domibus.alert.msg.communication_failure.level	HIGH	Alert levels corresponding to message status defined in previous property(domibus.alert.msg.communication_failure.states) .Should be (HIGH, MEDIUM OR LOW)
domibus.alert.msg.communication_failure.mail.subject	Message status change	Messaging alert module mail subject.
domibus.alert.user.login_failure.active	true	Enable/disable the login failure alert of the authentication module.
domibus.alert.user.login_failure.level	LOW	Alert level for login failure.
domibus.alert.user.login_failure.mail.subject	Login failure	Login failure mail subject.
domibus.alert.user.account_disabled.active	true	Enable/disable the account disable alert of the authentication module.
domibus.alert.user.account_disabled.level	HIGH	Alert level for account disabled.
domibus.alert.user.account_disabled.moment	WHEN_BLOCKED	When should the account disabled alert be triggered. 2 possible values: AT_LOGON: An alert will be triggered each a time user tries to login to a disabled account.
domibus.alert.user.account_disabled.subject	Account disabled	Account disabled mail subject.
domibus.alert.cert.imminent_expiration.active	true	Enable/disable the imminent certificate expiration alert of certificate scanner module.
domibus.alert.cert.imminent_expiration.frequency_days	14	Frequency in days between alerts.
domibus.alert.cert.imminent_expiration.level	HIGH	Certificate imminent expiration alert level.
domibus.alert.cert.imminent_expiration.mail.subject	Certificate imminent expiration	Certificate imminent expiration mail subject.
domibus.alert.cert.expired.active	true	Enable/disable the certificate expired alert of certificate scanner module.
domibus.alert.cert.expired.frequency_days	7	Frequency in days between alerts.

Configuration Property	Default value	Purpose
domibus.alert.cert.expired.duration_days	90	How long (in days) after the revocation should the system trigger alert for the expired certificate.
domibus.alert.cert.expired.level	HIGH	Certificate expired alert level.
domibus.alert.cert.expired.mail.subject	Certificate expired	Certificate expired mail subject.
domibus.alert.super.cleaner.cron	0 0 0/1 * * ?	Cron configuration for cleaning super user alerts.
domibus.alert.super.cleaner.alert.lifetime	20	Lifetime in days of super user alerts.
domibus.alert.super.active	true	Enable/disable the super user alert module.
domibus.alert.super.mail.sending.active	false	Enable/disable the super user alert mail sending.
domibus.alert.super.retry.cron	0 0/1 * * * ?	Frequency of failed super user alert retry.
domibus.alert.super.retry.time	1	Elapsed time in minutes between super user alert retry.
domibus.alert.super.retry.max_attempts	2	Maximum number of attempts for failed super user alert
domibus.alert.super.user.login_failure.active	true	Enable/disable the login failure super user alert of the authentication module.
domibus.alert.super.user.login_failure.level	LOW	Super user alert level for login failure.
domibus.alert.super.user.login_failure.mail.subject	Super user login failure	Super user login failure alert mail subject.
domibus.alert.super.user.account_disabled.active	true	Enable/disable the account disabled super user alert of the authentication module.
domibus.alert.super.user.account_disabled.level	HIGH	Super user alert level for account disabled.
domibus.alert.super.user.account_disabled.moment	WHEN_BLOCKED	#When should the account disabled super user alert be triggered. # 2 possible values: # AT_LOGON: An alert will be triggered each a time user tries to login to a disabled

Configuration Property	Default value	Purpose
		account. # WHEN_BLOCKED: An alert will be triggered once when the account got disabled.
domibus.alert.super.user.account_disabled.subject	Super user account disabled	Super user account disabled alert mail subject.
Alert management for Plugin Password policy		Properties for configuring alerts for plugin users security policy
domibus.alert.plugin_password.imminent_expiration.active	true	Enable/disable the imminent password expiration alert
domibus.alert.plugin_password.imminent_expiration.delay_days	15	Number of days before expiration as for how long before expiration the system should send alerts.
domibus.alert.plugin_password.imminent_expiration.frequency_days	3	Frequency in days between alerts.
domibus.alert.plugin_password.imminent_expiration.level	LOW	Password imminent expiration alert level.
domibus.alert.plugin_password.imminent_expiration.mail.subject	Password imminent expiration	Password imminent expiration mail subject.
domibus.alert.plugin_password.expired.active	true	Enable/disable the imminent password expiration alert
domibus.alert.plugin_password.expired.delay_days	30	Number of days after expiration as for how long the system should send alerts.
domibus.alert.plugin_password.expired.frequency_days	5	Frequency in days between alerts.
domibus.alert.plugin_password.expired.level	LOW	Password expiration alert level.
domibus.alert.plugin_password.expired.mail.subject	Password expired	Password expiration mail subject.
Alert management:authentication module for plugin users		Properties for configuring alerts for plugin user authentication
domibus.alert.plugin.user.login_failure.active	true	Enable/disable the login failure alert of the authentication module.
domibus.alert.plugin.user.login_failure.level	LOW	Alert level for login failure.

Configuration Property	Default value	Purpose
domibus.alert.plugin.user.login_failure.mail.subject	Login failure	Login failure mail subject.
domibus.alert.plugin.user.account_disabled.active	true	Enable/disable the account disable alert of the authentication module.
domibus.alert.plugin.user.account_disabled.level	HIGH	Alert level for account disabled.
domibus.alert.plugin.user.account_disabled.moment	WHEN_BLOCKED	When should the account disabled alert be triggered: 2 possible values: - AT_LOGON: An alert will be triggered each time a user tries to login to a disabled account. - WHEN_BLOCKED: An alert will be triggered once when the account got disabled.
domibus.alert.plugin.user.account_disabled.subject	Account disabled	Account disabled mail subject.
domibus.attachment.temp.storage.location		SplitAndJoin only: Domibus uses a file system location for storing temporary data when processing SplitAndJoin messages. In a cluster configuration the temporary file system storage needs to be accessible by all the nodes from the cluster.
domibus.dispatcher.splitAndJoin.concurrency	1	SplitAndJoin only: specify concurrency limits via a "lower-upper" String, e.g. "5-10", or a simple upper limit String, e.g. "10" (the lower limit will be 1 in this case) when sending the SourceMessage receipt (Split and Join) to other Access Points
domibus.dispatcher.splitAndJoin.payloads.schedule.threshold	1000	SplitAndJoin only: The threshold value in MB to switch from synchronous to asynchronous saving of outgoing SourceMessage payloads
domibus.splitAndJoin.receive.expiration.cron	0 0/5 * * * ?	SplitAndJoin only: Cron expression that specifies the frequency of the checking if

Configuration Property	Default value	Purpose
		the joinInterval has expired
domibus.pull.dynamic.initiator	false	Allow dynamic initiator on pull requests - 0 or multiple initiators are allowed in the Pmode process
domibus.pull.multiple_legs	false	Allow multiple legs configured on the same pull process (with the same security policy)
domibus.pull.force_by_mpc	false	Force message into READY_TO_PULL when mpc attribute is present
domibus.pull.mpc_initiator_separator	PID	Mpc initiator separator. This is used when the mpc provides information on the initiator.
Metrics		Properties related to Metrics configuration
domibus.metrics.jmx.reporter.enable	false	Enable jmx reporter for dropwizard metrics. The following warning: We do not recommend that you try to gather metrics from your production environment. JMX's RPC API is fragile. For development purposes and browsing, though, it can be very useful.
domibus.metrics.sl4j.reporter.enable	true	Enable sl4j reporter for dropwizard metrics
domibus.metrics.sl4j.reporter.period.time.unit	MINUTES	The time unit used to configure the frequency of writing statistics into the statistic.log file. #Possible values are: SECONDS, MINUTES, HOURS
domibus.metrics.sl4j.reporter.period.number	1	The number of period of the previously time unit used to configure the frequency of writing statistics into the statistic.log file. E.g. the default configuration will write statistics with the file every 1 MINUTE.

Configuration Property	Default value	Purpose
domibus.metrics.monitor.memory	true	Activate dropwizard memory metrics
domibus.metrics.monitor.gc	true	Activate dropwizard GC metrics
domibus.metrics.monitor.cached.threads	true	Activate dropwizard cached threads metrics
domibus.metrics.monitor.jms.queues	true	Activate dropwizard JMS Queues metrics
domibus.metrics.monitor.jms.queues.refresh.period	0	How long (in seconds) the JMS count will be cached. Defaults to 0 - the count isn't cached
domibus.metrics.monitor.jms.queues.show.dlq.only	true	Add metrics for only for DLQ queue count only
Admin Users Password Policy		Properties related to admin user security policy management
domibus.passwordPolicy.pattern	^(?=.*[0-9])(?=.*[a-z])(?=.*[A-Z])(?=.*[~`!@#$%^&+=\\-_<>.,?:;*/()\|\\[\\]{}'"\\\\]).{8,32}$	Password minimum complexity rules (empty to disable password complexity enforcement)
domibus.passwordPolicy.validationMessage	Minimum length: 8 characters;Maximum length: 32 characters;At least one letter in lowercase;At least one letter in uppercase;At least one digit;At least one special character	Password validation message in case it does not meet the rools above
domibus.passwordPolicy.expiration	90	Password expiration policy in days (0 to disable)
domibus.passwordPolicy.defaultPasswordExpiration	15	Default password expiration policy in days (0 to disable)
domibus.passwordPolicy.warning.beforeExpiration	15	Password expiration policy: how many days before expiration should the system warn users at login
domibus.passwordPolicy.dontReuseLast	5	Password reuse policy: do not reuse any of the last N passwords (0 to disable)
domibus.passwordPolicy.checkDefaultPassword	true	Default password validation policy enabled/disabled (by default is enabled)
domibus.passwordPolicies.check.cron	0 0 0/1 * * ?	Cron expression that specifies the frequency of the password expiration check

Configuration Property	Default value	Purpose
Plugin Users Password Policy		Properties related to plugin user security policy management
domibus.plugin.passwordPolicy.pattern	^(?=.*[0-9])(?=.*[a-z])(?=.*[A-Z])(?=.*[~`!@#$%^&+=\\-_<>.,?:;*/()\|\\[\\]{}'"\\\\]).{8,32}$	Password minimum complexity rules (empty to disable password complexity enforcement)
domibus. plugin.passwordPolicy.validationMessage	Minimum length: 8 characters;Maximum length: 32 characters;At least one letter in lowercase;At least one letter in uppercase;At least one digit;At least one special character	Password validation message in case it does not meet the rools above
domibus. plugin.passwordPolicy.expiration	90	Password expiration policy in days (0 to disable)
domibus. plugin.passwordPolicy.defaultPasswordExpiration	1	Default password expiration policy in days (0 to disable)
domibus. plugin.passwordPolicy.dontReuseLast	5	Password reuse policy: do not reuse any of the last N passwords (0 to disable)
domibus. plugin.passwordPolicies.check.cron	0 0 0/1 * * ?	Cron expression that specifies the frequency of the password expiration check
domibus.password.encryption.active	false	Domibus encrypts the configured passwords if activated
domibus.password.encryption.properties	Depends on the server	Enable this property if the password encryption is activated. Add the list of configured passwords to be encrypted.
domibus.password.encryption.key.location	${domibus.config.location}/internal/encrypt	The location where the encrypted key is stored
domibus.payload.encryption.active	false	Domibus encrypts the payloads stored in the database or file system if this property is active
domibus.payload.temp.job.retention.exclude.regex	.*ehcache-sizeof-agent.*	Temporary files are excluded from deletion if this regular expression matches the file name.
domibus.payload.temp.job.retention.directories	domibus.attachment.temp.storage.location	List of directories to check for cleaning the temporary files.
domibus.payload.temp.job.retention.cron	0 0/10 * * * ?	Cron expression that specifies the frequency of checking if the temporary payloads have

Configuration Property	Default value	Purpose
		expired.
domibus.payload.temp.job.retention.expiration	120	The threshold in minutes for considering the temporary payloads as expired. The expired temporary payloads are scheduled to be deleted.
domibus.dss.ssl.trust.store.path	${domibus.config.location}/keystores/dss-tls-truststore.p12	TLS truststore for dss dataloader.
domibus.dss.ssl.trust.store.password	dss-tls	TLS truststore password for dss dataloader.
domibus.dss.ssl.trust.store.type	PKCS12	TLS truststore type dss dataloader.
domibus.dss.ssl.cacert.path		Override cacert truststore path if needed.
domibus.dss.ssl.cacert.type	JKS	Cacert truststore type.
domibus.dss.ssl.cacert.password	changeit	Cacert truststore password.
domibus.dss.perform.crl.check	false	Perform crl check within dss. It is perfomed by Domibus.
Validation		
dateTime format	yyyy-MM-dd'T'HH:mm:ss[.SSSSSSSSS][.SSSSSS][.SSS][z]	Pattern accepted by Domibus for AS4 connection for the type dateTime. Possible values: # 2020-06-02T20:12:34.5678901 # 2020-06-02T20:12:34.5678901.234 # 2020-06-02T20:12:34.5678901.234567 # 2020-06-02T20:12:34.5678901.234567890 # 2020-06-02T20:12:34.5678901Z # 2020-06-02T20:12:34.5678901.234Z # 2020-06-02T20:12:34.5678901.234567Z # 2020-06-02T20:12:34.5678901.234567890Z
Message prioritization		Priority rules used to assign a specific JMS priority for dispatched messages. Multiple rules can be defined. Rules names must be unique to avoid name collision.
domibus.dispatcher.priority.rule1		Priority rule name. The rule name will be further used to specify additional rule

Configuration Property	Default value	Purpose
		properties.
domibus.dispatcher.priority.rule1.service		Service value to be matched against the sent message
domibus.dispatcher.priority.rule1.action		List of actions separated by comma to be matched against the sent message
domibus.dispatcher.priority.rule1.value		Priority value assigned to the JMS message. Accepted priority values must be between 1-9 included. Priority value assigned to the JMS message. Accepted priority values must be between 1-9 included. Priority value assigned to the JMS message. Accepted priority values must be between 1-9 included.
domibus.monitoring.connection.cron	0 0 0/2 ? * * *	Cron expression that specifies the frequency of test messages sent to monitor the C2-C3 connections.
domibus.monitoring.connection.party.enabled		Specifies the parties for which to monitor the connection (comma-separated list).
domibus.ui.support.team.name	EDELIVERY Support Team	Support team name.
domibus.ui.support.team.email	CEF-EDELIVERY-SUPPORT@ec.europa.eu	Support team email.
domibus.ui.csv.rows.max	10000	Max rows for CSV export.
domibus.ui.resend.action.enabled.received.minutes	5	Specifies how many minutes after message received date the Resend button will become enabled for messages that have SEND_ENQUEUED status.
domibus.extension.iam.authentication.identifier	DEFAULT_AUTHENTICATION_SPI	Name of the authentication extension used to verify the chain trust. Default is CXF.
domibus.extension.iam.authorization.identifier	DEFAULT_AUTHORIZATION_SPI	Name of the authorization extension used to check incoming message authorization. Default is truststore check.

Table 1 - Domibus Properties

5.2.1. Password encryption

Passwords configured in *domibus.properties* are stored by default in clear text. The Domibus configuration file, *domibus.properties*, is not accessible for third-party users. Nevertheless, it is a good practice to encrypt the configured passwords in order to increase the security level.

Domibus encrypts the configured passwords using symmetric encryption with *AES/GCM/NoPadding* algorithm. In order to activate the password encryption, please set the property *domibus.password.encryption.active=true* and uncomment the domibus.password.encryption.properties to enable the list of configured passwords to be encrypted. Once activated, all the passwords configured under the property *domibus.password.encryption.properties* will be encrypted.

Domibus generates the symmetric key the first time the password encryption is activated. The generated symetric key is stored in the file *encrypted.key*, in the location specified by the property *domibus.password.encryption.key.location*.

For instance, the property *domibus.security.keystore.password=test123* will be encrypted to *domibus.security.keystore.password=ENC(4DTXnc9zUuYqB0P/q7RtRHpG9VJLs3E=).*

6. PLUGIN MANAGEMENT

This section describes the different types of plugins and their registration process.

6.1. Default Plugins

Domibus comes with three default plugins. The three Interface Control Documents (ICD) describe these three plugins (JMS, WS and File System Plugin) (cf.[REF6]).

6.1.1. JMS Plugin

For the JMS plugin, you will have to use the following resources (see section § 3.1-" *Binaries repository* " for the download location):

- **domibus-distribution-X.Y.Z-default-jms-plugin.zip**

6.1.2. WS Plugin

For the WS plugin, you will have to use the following resources (see section §3.1-*"Binaries repository"* for the download location):

- **domibus-distribution-X.Y.Z-default-ws-plugin.zip**

6.1.3. File System Plugin

For the File System plugin, you will have to use the following resources (see section §3.1-*"Binaries repository"* for the download location):

- **domibus-distribution-X.Y.Z-default-fs-plugin.zip**

6.2. Custom Plugin

Users can develop their own plugins. Please refer to the plugin cookbook for more details (cf.[REF6]).

6.2.1. Plugin registration

***Remark**:*

Please refer to section 10.3 “Message Log” "" *for the routing of the specific plugin after registering the plugin on your specific Application Server.*

6.2.1.1. Tomcat

In order to install a custom plugin for Tomcat, please follow the steps below**:**

1. Stop Tomcat server
2. Copy the custom plugin jar file to the plugins folder *CATALINA_HOME***/conf/domibus/plugins/lib**

3. Copy the custom plugin XML configuration files under the tomcat subfolder **directly** to *CATALINA_HOME***/conf/domibus/plugins/config.** . There shouldn't be a tomcat folder under *DOMAIN_HOME***/conf/domibus/plugins/config**
4. Start Tomcat server

Remark:

CATALINA_HOME is the folder where the Tomcat is installed.

6.2.1.2. *WebLogic*

In order to install a custom plugin for WebLogic please follow the steps below**:**

1. Stop the WebLogic server
2. Copy the custom plugin jar file to the plugins folder *DOMAIN_HOME***/conf/domibus/plugins/lib**
3. Copy the custom plugin XML configuration files under the weblogic subfolder **directly** to *DOMAIN_HOME***/conf/domibus/plugins/config** folder. There shouldn't be a weblogic folder under *DOMAIN_HOME***/conf/domibus/plugins/config**
4. Start the WebLogic server

Remark:

DOMAIN_HOME is the folder corresponding to the WebLogic domain.

6.2.1.3. WildFly

In order to install a custom plugin please follow the steps below**:**

1. Stop the WildFly server
2. Copy the custom plugin jar file to the plugins folder *cef_edelivery_path* **/conf/domibus/plugins/lib**
3. Copy the custom plugin XML configuration files under the wildfly subfolder **directly** to *cef_edelivery_path* **/conf/domibus/plugins/config.** There shouldn't be a WildFly folder under *DOMAIN_HOME***/conf/domibus/plugins/config**
4. Start the WildFly server

6.3. Plugin authentication

The plugins authentication is disabled by default for the default plugins. In order to enable the plugin authentication for the default plugins in Domibus the following steps must be followed:

1. Set the property "**domibus.auth.unsecureLoginAllowed**" to false in **domibus.properties**:

```
domibus.auth.unsecureLoginAllowed=false
```

2. Configure the application server to allow http(s) requests and pass the authentication credentials to Domibus.

6.4. Plugin notifications

Domibus core notifies the plugins on different events. The types of events are:

MESSAGE_RECEIVED, ***MESSAGE_SEND_FAILURE***, ***MESSAGE_RECEIVED_FAILURE***, ***MESSAGE_SEND_SUCCESS***, ***MESSAGE_STATUS_CHANGE***

For each plugin, it is possible in the configuration file (*-plugin.xml) to specify the list of events for which it requires notifications. This list is optional and passed as a constructor argument to the NotificationListener bean.

Example:

```
<util:list id="requiredNotificationsList" value-type="eu.domibus.common.NotificationType">
    <value>MESSAGE_RECEIVED</value>
    <value>MESSAGE_SEND_FAILURE</value>
    <value>MESSAGE_STATUS_CHANGE</value>
</util:list>
<bean id="webserviceNotificationListenerService"
     class="eu.domibus.plugin.NotificationListenerService"
     c:queue-ref="notifyBackendWebServiceQueue" c:mode="PULL"
     p:backendConnector-ref="backendWebservice"/>
     p:backendConnector-ref="backendWebservice">
    <constructor-arg ref="requiredNotificationsList"/>
</bean>
```

This list is optional. By default, PULL plugins receive notifications **for MESSAGE_RECEIVED, MESSAGE_SEND_FAILURE, MESSAGE_RECEIVED_FAILURE** while the **PUSH** plugins receive notification for all events.

6.5. Plugin Ehcache files

Pluging are able to use their own Ehcache files for defining caches:

- Default Classpath file (into the .jar of the plugin) – must be of name *-plugin-default-ehcache.xml and must be situated in a folder named /ehcache

- External file which overrides the caches defined in the default file: must have the name *plugin-ehcache.xml and should be situated in the Domibus configuration folder at location/plugins/config along with the other configuration files for plugins

More details could be found in the Plugin Cookbok (cf.[REF6]).

7. PMODE CONFIGURATION

Processing Modes (PModes) are used to configure Access Points. The PMode parameters are loaded into the Access Point via an XML file.

The features described in the PMode file are: Security, Reliability, Transport, Business Collaborations, Error Reporting, Message Exchange Patterns (MEPs) and Message Partition Channels (MPCs).

As different messages may be subject to various types of processing or, as different business domains may have several requirements, Access Points commonly support several PModes. Some PMode parameters are mandatory, others are optional. For more information, please refer to the Access Point Component Offering Document.

7.1. Configuration

In Domibus, PModes are XML files that you can create or edit. You can configure the two files given: *cef_edelivery_path***/conf/pmodes/domibus-gw-sample-pmode**-*party_id_name1***.xml** and *cef_edelivery_path***/conf/pmodes/domibus-gw-sample-pmode**-*party_id_name2***.xml.**

The "*party_id_name1" value must be replaced* with your own party name and *the "party_id_name2"* with your corresponding party name.

The party_id must match the alias of the certificate in the keystore and the endpoint must be the external access link to your instance.

***Remark**:*

This step could be managed by a PMode Configuration Manager, known to your Business Owner.

```
<party name="party_id_name2"
          endpoint="http:// party_id_name2_hostname:8080/domibus/services/msh">
   <identifier partyId="party_id_name2_1"
                    partyIdType="partyTypeUrn"/>
</party>
<party name="party_id_name1"
          endpoint="http:// party_id_name1_hostname:8080/domibus/services/msh">
   <identifier partyId="party_id_name1_1" partyIdType="partyTypeUrn"/>
</party>
```

7.1.1. *Adding a new participant*

If a new participant's Access Point is joining your network, you need to configure your PMode accordingly and re-upload it like mentioned in §7.1.4 – *"Upload new Configuration"*.

- Add a "new_party" element:

```
<party name="new_party_name"
                        endpoint="http://new_party_msh" >
        <identifier partyId="new_party_id" partyIdType="partyTypeUrn"/>
</party>
```

- Add your "new_party_name" as initiator:

The party with the role of initiator will be the sender of the messages:

```
<initiatorParties>
                ...
                <initiatorParty name="new_party_name"/>
        </initiatorParties>
```

- Add your "new_party_name" as responder:

The party with the role of responder will be the receiver of the messages:

```
<responderParties>
                ...
                <responderParty name="new_party_name"/>
        </responderParties>
```

7.1.2. Sample PMode file

Processing modes (PModes) describe how messages are exchanged between AS4 partners (in this case *Access Points blue_gw and red_gw*). These files contain the identifiers of each AS4 Access Point (identified as *parties* in the PMode file below).

Sender and Receiver Identifiers represent the organizations that send and receive the business documents. They are both used in the authorization process (PMode). Therefore, adding, modifying or deleting a participant implies modifying the corresponding PMode files.

Here is an example of a PMode XML file:

Remark:

In this setup, we have allowed each party (blue_gw or red_gw) to initiate the process. If only blue_gw is supposed to send messages, then put only blue_gw in <initiatorParties> and red_gw in <responderParties>.

```
<?xml version="1.0" encoding="UTF-8"?>
<db:configuration xmlns:db="http://domibus.eu/configuration" party="blue_gw">

        <mpcs>
                <mpc name="defaultMpc"
                        qualifiedName="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/defaultMPC"
                        enabled="true"
                        default="true"
                        retention_downloaded="0"
                        retention_undownloaded="14400"/>
                        retention_sent="14400"
                        delete_message_metadata="false"
                        max_batch_delete="1000"/>
```

```
        </mpcs>
        <businessProcesses>
                <roles>
                        <role name="defaultInitiatorRole"
                                        value="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/initiator"/>
                        <role name="defaultResponderRole"
                                        value="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/responder"/>
                </roles>
                <parties>
                        <partyIdTypes>
                                <partyIdType name="partyTypeUrn"
value="urn:oasis:names:tc:ebcore:partyid-type:unregistered"/>
                        </partyIdTypes>
                        <party name="red_gw"
                                   endpoint="http://<red_hostname>:8080/domibus/services/msh">
                                <identifier partyId="domibus-red" partyIdType="partyTypeUrn"/>
                        </party>
                        <party name="blue_gw"

        endpoint="http://<blue_hostname>:8080/domibus/services/msh">
                                <identifier partyId="domibus-blue" partyIdType="partyTypeUrn"/>
                        </party>
                </parties>
                <meps>
                        <mep name="oneway" value="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/oneWay"/>
                        <mep name="twoway" value="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/twoWay"/>
                        <binding name="push" value="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/push"/>
                        <binding name="pull" value="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/pull"/>
                        <binding name="pushAndPush" value="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/push-and-push"/>
                </meps>
                <properties>
                        <property name="originalSenderProperty"
                                        key="originalSender"
                                        datatype="string"
                                        required="true"/>
                        <property name="finalRecipientProperty"
                                        key="finalRecipient"
                                        datatype="string"
                                        required="true"/>
                        <propertySet name="eDeliveryPropertySet">
                                <propertyRef property="finalRecipientProperty"/>
                                <propertyRef property="originalSenderProperty"/>
                        </propertySet>
                </properties>
                <payloadProfiles>
                        <payload name="businessContentPayload"
```

```
                                        cid="cid:message"
                                        required="true"
                                        mimeType="text/xml"/>
                        <payload name="businessContentAttachment"
                                        cid="cid:attachment"
                                        required="false"
                                        mimeType="application/octet-stream"/>
                        <payloadProfile name="MessageProfile" maxSize="2147483647">
                                <attachment name="businessContentPayload"/>
                                <attachment name="businessContentAttachment"/>
                        </payloadProfile>
                </payloadProfiles>
                <securities>
                        <security name="eDeliveryAS4Policy"
                                        policy="eDeliveryAS4Policy.xml"
                                        signatureMethod="RSA_SHA256" />
                </securities>
                <errorHandlings>
                        <errorHandling name="demoErrorHandling"
                                        errorAsResponse="true"
                                        businessErrorNotifyProducer="true"
                                        businessErrorNotifyConsumer="true"
                                        deliveryFailureNotifyProducer="true"/>
                </errorHandlings>
                <agreements>
                        <agreement name="agreement1" value="A1" type="T1"/>
                </agreements>
                <services>
                        <service name="testService1" value="bdx:noprocess" type="tc1"/>
                        <service name="testService" value="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/service"/>
                </services>
                <actions>
                        <action name="tc1Action" value="TC1Leg1"/>
                        <action name="testAction" value="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/test"/>
                </actions>
                <as4>
                        <receptionAwareness name="receptionAwareness" retry="12;4;CONSTANT"
duplicateDetection="true"/>
                        <reliability name="AS4Reliability" nonRepudiation="true"
replyPattern="response"/>
                </as4>
                <legConfigurations>
                        <legConfiguration name="pushTestcase1tc1Action"
                                        service="testService1"
                                        action="tc1Action"
                                        defaultMpc="defaultMpc"
                                        reliability="AS4Reliability"
                                        security="eDeliveryAS4Policy"
                                        receptionAwareness="receptionAwareness"
                                        propertySet="eDeliveryPropertySet"
                                        payloadProfile="MessageProfile"
```

```
                                        errorHandling="demoErrorHandling"
                                        compressPayloads="true"/>
                        <legConfiguration name="testServiceCase"
                                                        service="testService"
                                                        action="testAction"
                                                        defaultMpc="defaultMpc"
                                                        reliability="AS4Reliability"
                                                        security="eDeliveryAS4Policy"
                                                        receptionAwareness="receptionAwareness"
                                                        propertySet="eDeliveryPropertySet"
                                                        payloadProfile="MessageProfile"
                                                        errorHandling="demoErrorHandling"
                                                        compressPayloads="true"/>
                </legConfigurations>
<process name="tc1Process"
      mep="oneway"
      binding="push"
      initiatorRole="defaultInitiatorRole"
      responderRole="defaultResponderRole">
         <initiatorParties>
                <initiatorParty name="blue_gw"/>
                <initiatorParty name="red_gw"/>
         </initiatorParties>
         <responderParties>
                <responderParty name="blue_gw"/>
                <responderParty name="red_gw"/>
         </responderParties>
         <legs>
                <leg name="pushTestcase1tc1Action"/>
                <leg name="testServiceCase"/>
         </legs>
</process>
         </businessProcesses>
</db:configuration>
```

7.1.3. Domibus PMode configuration to ebMS3 PMode Mapping

The following table provides additional information concerning the Domibus PMode configuration files.

Domibus PMode Configuration	EbMS3 Specification [ebMS3CORE] [AS4-Profile]	Description
MPCs	-	Container which defines the different MPCs (Message Partition Channels).
MPC	PMode[1].BusinessInfo.MPC: The value of this parameter is the identifier of the MPC (Message Partition Channel) to which the message is assigned. It maps to the attribute **Messaging** / **UserMessage**	Message Partition Channel allows the partition of the flow of messages from a *Sending MSH* to a *Receiving MSH* into several flows, each of which is controlled separately. An MPC also allows merging flows from several *Sending MSHs* into a unique flow that will be treated as such by a *Receiving MSH*. The value of this parameter is the identifier of the MPC to which the message is assigned.
MessageRetentionDownloaded	-	Retention interval for messages already delivered to the backend.
MessageRetentionUnDownloaded	-	Retention interval for messages not yet delivered to the backend.
MessageRetentionSent		Retention interval for messages already sent with success or failed to the other MSH.
DeleteMessageMetadata		When true, message metadata is deleted together with the payload.
MaxBatch		Sets the maximum batch to be used when deleting messages in bulk. When there are multiple expired messages, they will be deleted in batches until all consumed.
Parties	-	Container which defines the different PartyIdTypes, Party and Endpoint.
PartyIdTypes	maps to the attribute **Messaging/UserMessage/ PartyInfo**	Message Unit bundling happens when the Messaging element contains multiple child elements or Units (either User Message Units or Signal Message Units).
Party ID	maps to the element **Messaging/UserMessage/ PartyInfo**	The ebCore Party ID type can simply be used as an identifier format and therefore as a convention for values to be used in configuration and – as such – does not require any specific solution building block.

Endpoint	maps to **PMode[1].Protocol.Address**	The endpoint is a party attribute that contains the link to the MSH. The value of this parameter represents the address (endpoint URL) of the *Receiver MSH* (or *Receiver Party*) to which Messages under this PMode leg are to be sent. Note that a URL generally determines the transport protocol (e.g. if the endpoint is an email address, then the transport protocol must be SMTP; if the address scheme is "http", then the transport protocol must be HTTP).
AS4	-	Container.
Reliability [@Nonrepudiation] [@ReplyPattern]	Nonrepudiation maps to **PMode[1].Security.SendReceipt.NonRepudiation** ReplyPattern maps to **PMode[1].Security.SendReceipt.ReplyPattern**	PMode[1].Security.SendReceipt.NonRepudiation : value = 'true' (to be used for non-repudiation of receipt), value = 'false' (to be used simply for reception awareness). PMode[1].Security.SendReceipt.ReplyPattern: value = 'Response' (sending receipts on the HTTP response or back-channel). PMode[1].Security.SendReceipt.ReplyPattern: value = 'Callback' (sending receipts use a separate connection).
ReceptionAwareness [@retryTimeout] [@retryCount] [@strategy] [@duplicateDetection]	retryTimeout maps to **PMode[1].ReceptionAwareness.Retry=true** PMode[1].ReceptionAwareness.Retry.Parameters retryCount maps to **PMode[1].ReceptionAwareness.Retry.Parameters** strategy maps to **PMode[1].ReceptionAwareness.Retry.Parameters** duplicateDetection maps to **PMode[1].ReceptionAwareness.DuplicateDetection**	These parameters are stored in a composite string. • *retryTimeout* defines timeout in minutes. • *retryCount* is the total number of retries. • *strategy* defines the frequency of retries. The only *strategy* available as of now is *CONSTANT*. • *duplicateDetection* allows to check duplicates when receiving twice the same message. The only *duplicateDetection* available as of now is *TRUE*.
Securities	-	Container.
Security	-	Container.
Policy	PMode[1].Security.* NOT including PMode[1].Security.X509.Signature.Algorithm	The parameter defines the name of a WS-SecurityPolicy file.
SignatureMethod	PMode[1].Security.X509.Signature.Algorithm	This parameter is not supported by WS-SecurityPolicy and therefore it is defined separately.
BusinessProcessConfiguration	-	Container.

Agreements	maps to eb:Messaging/ UserMessage/ CollaborationInfo/ AgreementRef	This OPTIONAL element occurs zero times or once. The *AgreementRef* element is a string that identifies the entity or artifact governing the exchange of messages between the parties.
Actions	-	Container.
Action	maps to **Messaging/ UserMessage/ CollaborationInfo/Action**	This REQUIRED element occurs once. The element is a string identifying an operation or an activity within a Service that may support several of these
Services	-	Container.
ServiceTypes Type	maps to **Messaging/ UserMessage/ CollaborationInfo/ Service[@type]**	This REQUIRED element occurs once. It is a string identifying the service that acts on the message and it is specified by the designer of the service.
MEP [@Legs]	-	An ebMS MEP defines a typical choreography of ebMS User Messages which are all related through the use of the referencing feature (RefToMessageId). Each message of an MEP Access Point refers to a previous message of the same Access Point, unless it is the first one to occur. Messages are associated with a label (e.g. *request*, *reply*) that precisely identifies their direction between the parties involved and their role in the choreography.
Bindings	-	Container.
Binding	-	The previous definition of ebMS MEP is quite abstract and ignores any binding consideration to the transport protocol. This is intentional, so that application level MEPs can be mapped to ebMS MEPs independently from the transport protocol to be used.
Roles	-	Container.

Role	Maps to **PMode.Initiator.Role or PMode.Responder.Role** depending on where this is used. In ebMS3 message this defines the content of the following element: • For Initiator: **Messaging/UserMessage/PartyInfo/From/Role** • For Responder: **Messaging/UserMessage/PartyInfo/To/Role**	The required role element occurs once, and identifies the authorized role (*fromAuthorizedRole* or *toAuthorizedRole*) of the Party sending the message (when present as a child of the *From* element), or receiving the message (when present as a child of the *To* element). The value of the role element is a non-empty string, with a default value of *http://docs.oasis-open.org/ebxml-msg/ebms/v3.0/ns/core/200704/defaultRole* Other possible values are subject to partner agreement.
Processes	-	Container.
PayloadProfiles	-	Container.
Payloads	-	Container.
Payload	maps to **PMode[1].BusinessInfo.PayloadProfile**	This parameter allows specifying some constraint or profile on the payload. It specifies a list of payload parts. A payload part is a data structure that consists of five properties: 1. **name** (or Content-ID) that is the **part identifier**, and can be used as an index in the notation PayloadProfile; 2. **MIME data type** (text/xml, application/pdf, etc.); 3. **name of the applicable XML Schema file** if the MIME data type is text/xml; 4. **maximum size in kilobytes; (currently not used)** 5. **Boolean** string indicating whether the part is **expected** or **optional**, within the User message. The message payload(s) must match this profile.
ErrorHandlings	-	Container.
ErrorHandling	-	Container.

ErrorAsResponse	maps to **PMode[1].ErrorHandling.Report.AsResponse**	This Boolean parameter indicates (if *true*) that errors generated from receiving a message in error are sent over the back-channel of the underlying protocol associated with the message in error. If *false*, such errors are not sent over the back-channel.
ProcessErrorNotifyProducer	maps to **PMode[1].ErrorHandling.Report.ProcessErrorNotifyProducer**	This Boolean parameter indicates whether (if *true*) the Producer (application/party) of a User Message matching this PMode should be notified when an error occurs in the Sending MSH, during processing of the *User Message to be sent*.
ProcessErrorNotifyConsumer	maps to **PMode[1].ErrorHandling.Report.ProcessErrorNotifyProducer**	This Boolean parameter indicates whether (if *true*) the Consumer (application/party) of a User Message matching this PMode should be notified when an error occurs in the Receiving MSH, during processing of the *received User message*.
DeliveryFailureNotifyProducer	maps to **PMode[1].ErrorHandling.Report.DeliveryFailuresNotifyProducer**	When sending a message with this reliability requirement (*Submit* invocation), one of the two following outcomes shall occur: - The Receiving MSH successfully delivers (*Deliver* invocation) the message to the Consumer. - The Sending MSH notifies (*Notify* invocation) the Producer of a delivery failure.
Legs	-	Container.

Leg	-	Because messages in the same MEP may be subject to different requirements - e.g. the reliability, security and error reporting of a response may not be the same as for a request – the PMode will be divided into *legs*. Each user message label in an ebMS MEP is associated with a PMode leg. Each PMode leg has a full set of parameters for the six categories above (except for *General Parameters*), even though in many cases parameters will have the same value across the MEP legs. Signal messages that implement transport channel bindings (such as PullRequest) are also controlled by the same categories of parameters, except for *BusinessInfo group*.
Process	-	In *Process* everything is plugged together.

Table 2 - Domibus PMode configuration to ebMS3 mapping

7.1.4. Upload new Configuration

7.1.4.1. Upload the PMode file

Remark:

In case of a cluster environment, the PMode configuration is replicated automatically on all the nodes.

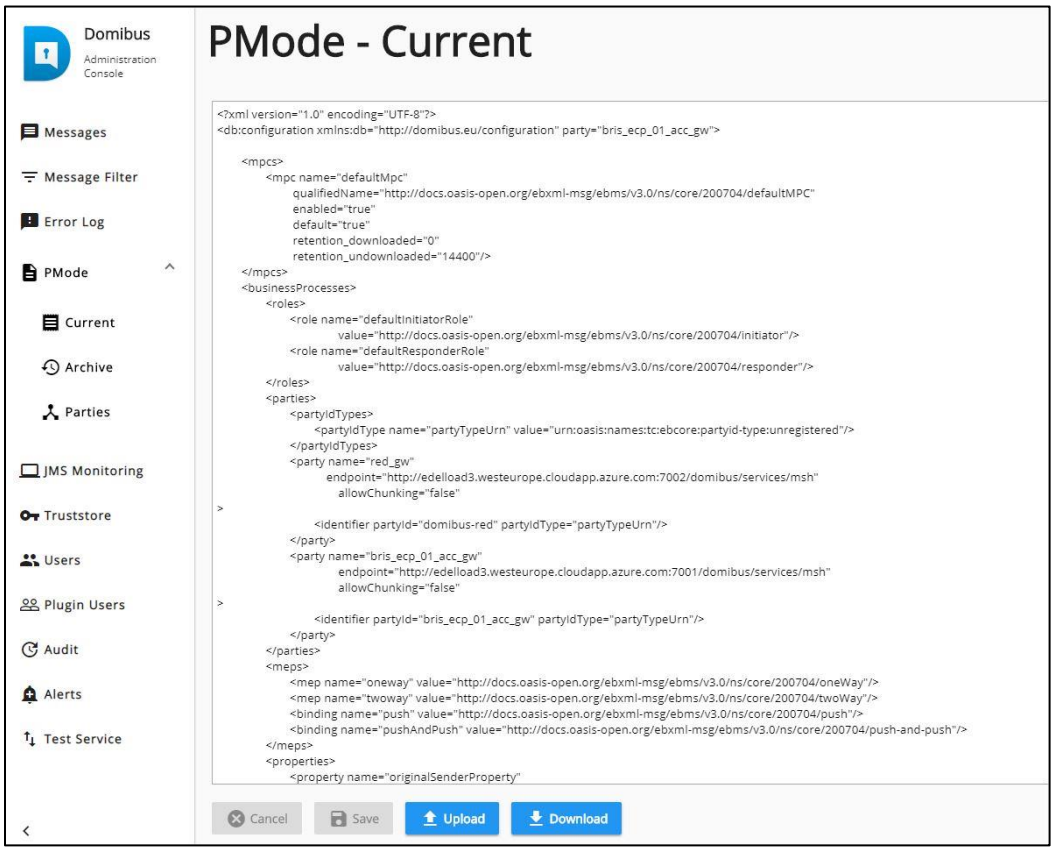
1. To update the PMode configuration and/or Truststore, connect to the Administration Console using the administrator's credentials (by default: User = ***admin***; Password = ***123456***) to http://*localhost*:*8080*/domibus.

Remark:

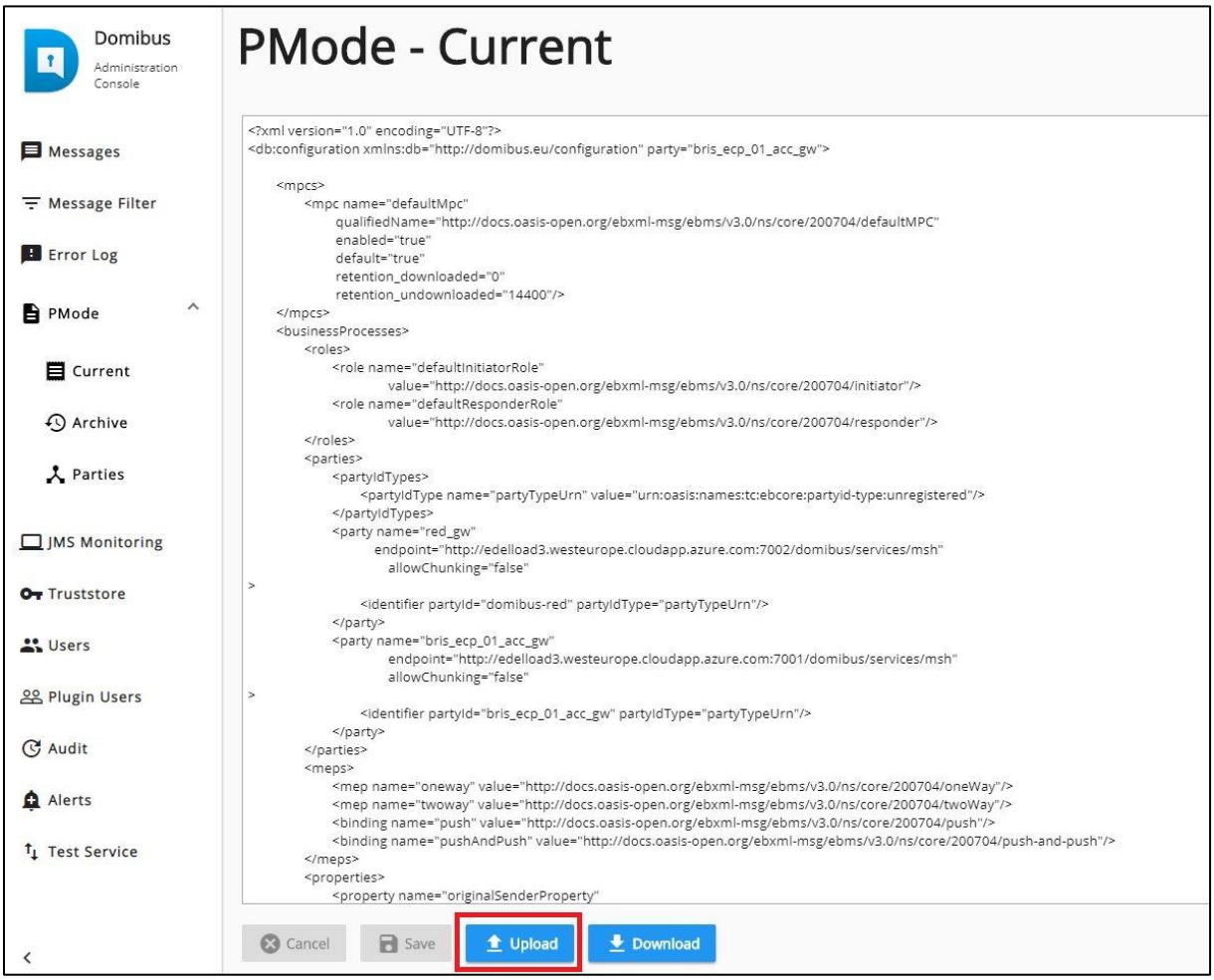
Duplicate parameters/entities are not allowed in PMode. XSD validation is used to find the duplicate entities.

It is recommended to change the passwords for the default users.
See §10.1 – "Administration " for further information.

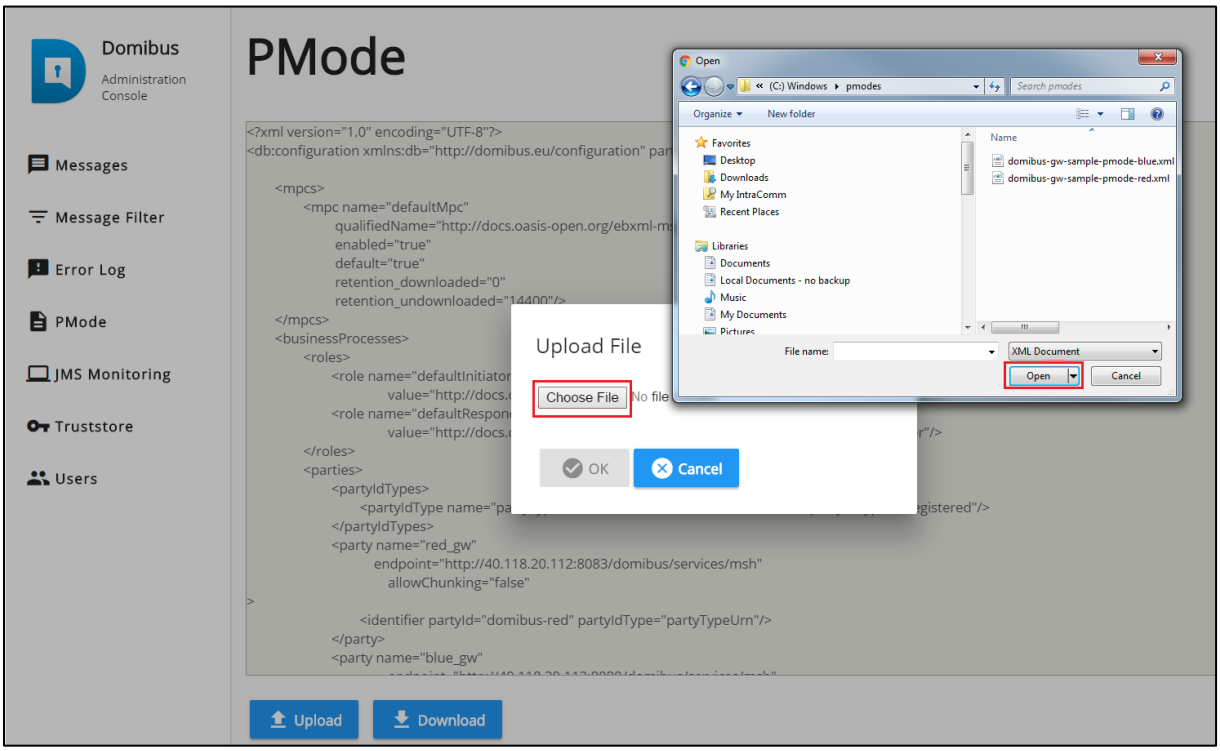
2. Click on the **PMode menu**:



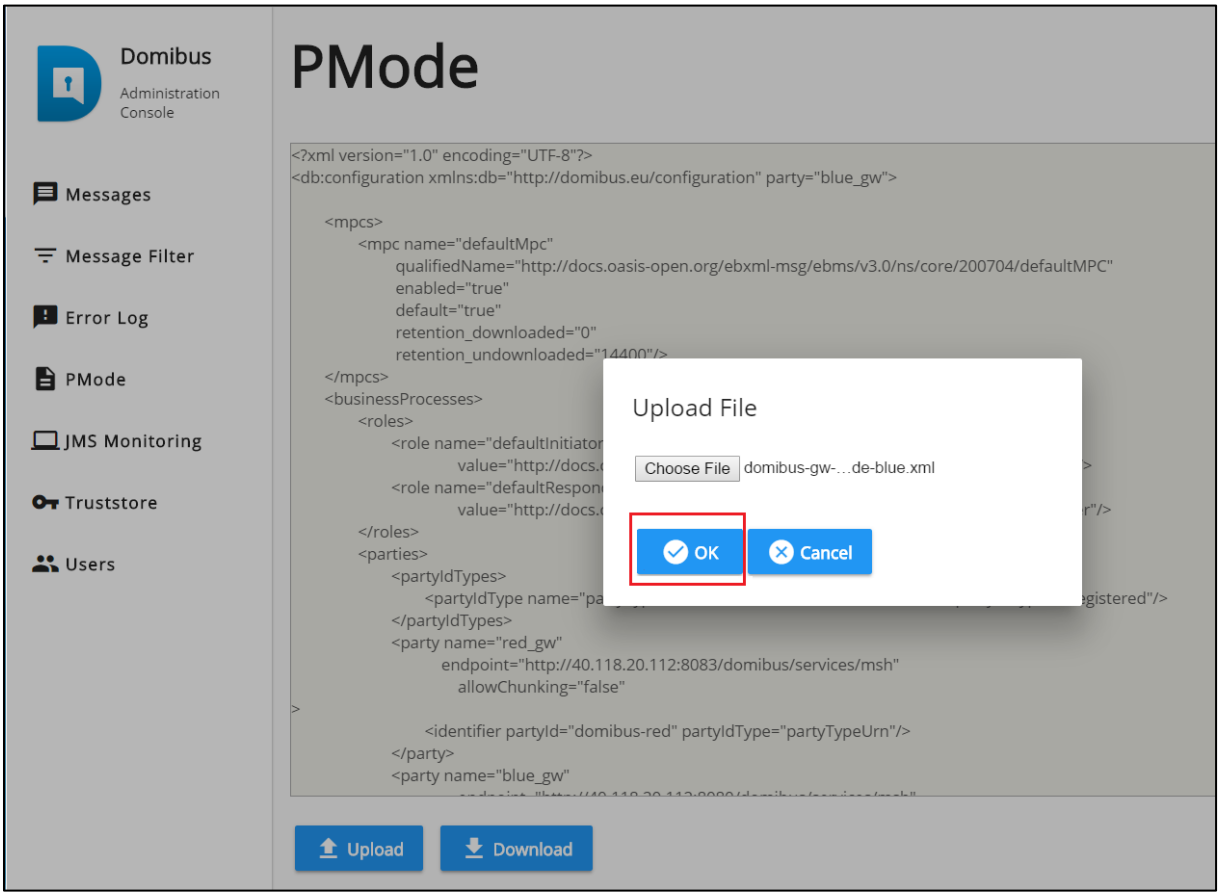
3. Press the **Upload** button:



4. Press the **Choose File** button, and navigate to the PMode file, select it and click on the **Open** button (or equivalent) in the standard dialog box:



5. Once the file has been selected, click "**OK**" to upload the PMode xml file:

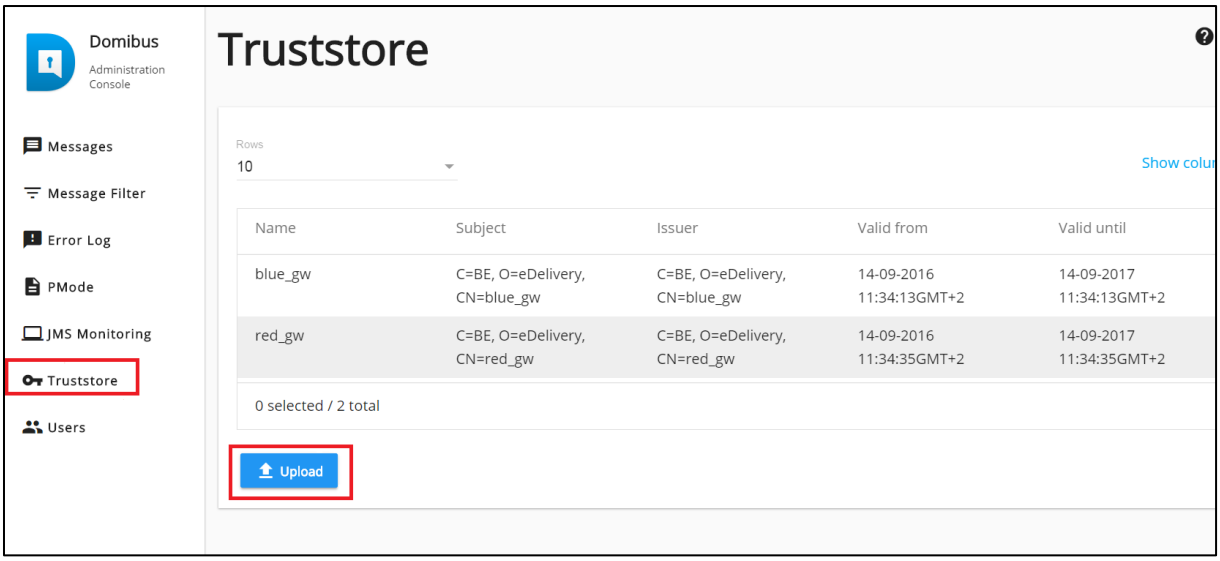


Remark:

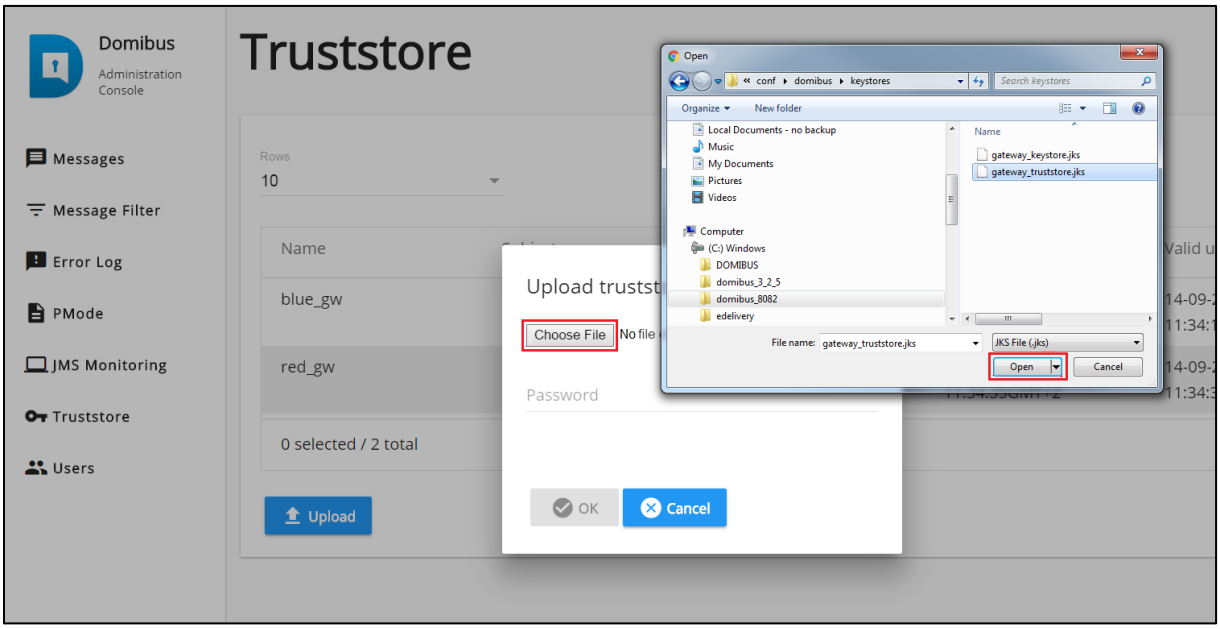
Every time a PMode is updated, the truststore is also reloaded from the filesystem.

7.1.4.2. Upload the Truststore

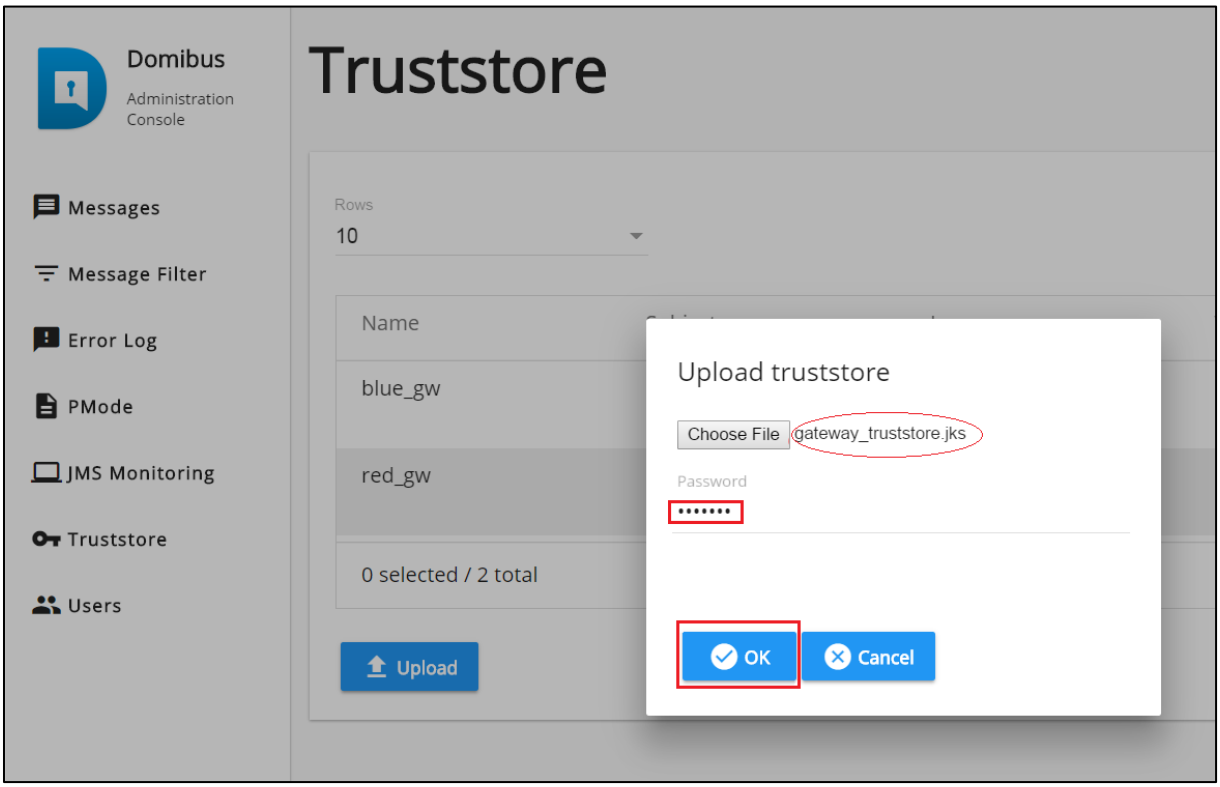
1. Select the "Truststore" menu and press the **Upload** button:



2. Navigate to the Truststore and select it by clicking on the **Open** button (or equivalent) of the standard file open dialog:



3. Once the file has been selected, enter the keystore password and click on the **OK** button to activate the new **truststore jks file:**



7.1.5. *Message properties validation*

While exchanging AS4 messages using PMode configuration, a user could define Message Properties like in the example below:

```
<ns:UserMessage>
....
   <ns:MessageProperties>
      <ns:Property name="originalSender">urn:oasis:names:tc:ebcore:partyid-
type:unregistered:C1</ns:Property>
       <ns:Property name="finalRecipient">urn:oasis:names:tc:ebcore:partyid-
type:unregistered:C4</ns:Property>
        </ns:MessageProperties>
...
</ns:UserMessage>
```

Domibus has a limitation of 1024 characters for the value of a Message Property. If this value is exceeded, an EbMS3Exception is thrown on both sending (C2) and receiving (C3) side and the message is not submitted/accepted.

```
                <properties>
                        <property name="originalSenderProperty"
                                        key="originalSender"
                                        datatype="string"
                                        required="true"/>
                        <property name="finalRecipientProperty"
                                        key="finalRecipient"
                                        datatype="string"
                                        required="true"/>
```

```
                <propertySet name="eDeliveryPropertySet">
                        <propertyRef property="finalRecipientProperty"/>
                        <propertyRef property="originalSenderProperty"/>
                </propertySet>
        </properties>
```

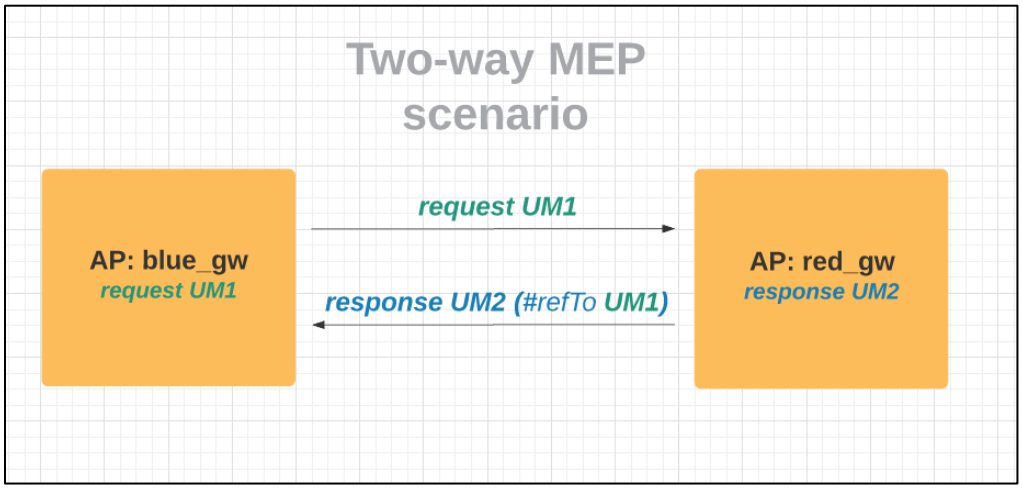
8. Two-way MEP Scenario

The **Two-Way MEP** governs the exchange of two User Messages in opposite directions, the first one being the request, and the second one being the response. The response must reference the request using eb:RefToMessageId.

A two-way scenario is presented below, including the PMode configuration for all 3 possible bindings for two-way exchanges: PushAndPush, PushAndPull, PullAndPush.

The scenario is the following: blue_gw wants to place an order to red_gw and expects a response from red_gw.

Blue_gw has the 'request' UserMessage that needs to be exchanged with the red_gw, and red_gw has the 'response' UserMessage that needs to be exchanged with blue_gw.



Processes described below simulate the 3 possible bindings for Two-Way mep.

Two legs are used: leg1 for the exchange of the request UM1 and leg2 for the exchange of response UM2. The legs are reused in all 3 bindings.

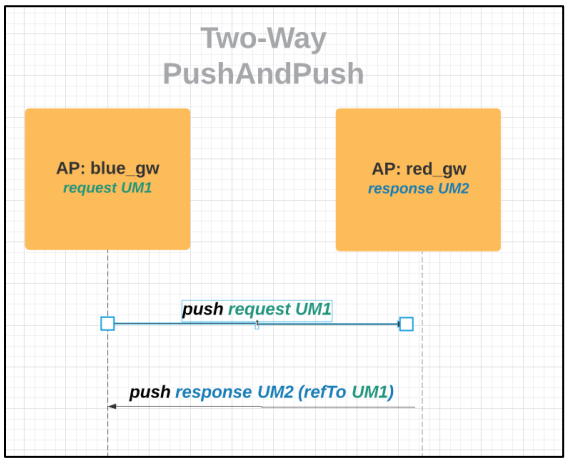
```
<legConfiguration name="leg1"
                  service="serviceA"
                  action="action1"
                  defaultMpc="mpcA"
                  reliability="AS4Reliability"
                  security="eDeliveryAS4Policy"
                  receptionAwareness="receptionAwareness"
                  propertySet="eDeliveryPropertySet"
                  payloadProfile="MessageProfile"
                  errorHandling="demoErrorHandling"
                  compressPayloads="true"/>
<legConfiguration name="leg2"
                  service="serviceA"
                  action="action2"
                  defaultMpc="mpcA"
                  reliability="AS4Reliability"
                  security="eDeliveryAS4Policy"
```

```
                                receptionAwareness="receptionAwareness"
                                propertySet="eDeliveryPropertySet"
                                payloadProfile="MessageProfile"
                                errorHandling="demoErrorHandling"
                                compressPayloads="false"/>
```

8.1. PushAndPush binding

pushLeg1: blue_gw pushes the request UM1 on leg1

pushLeg2: red_gw pushes the response UM2 on leg2 - requires RefToMessageId: UM1



PMode configuration:

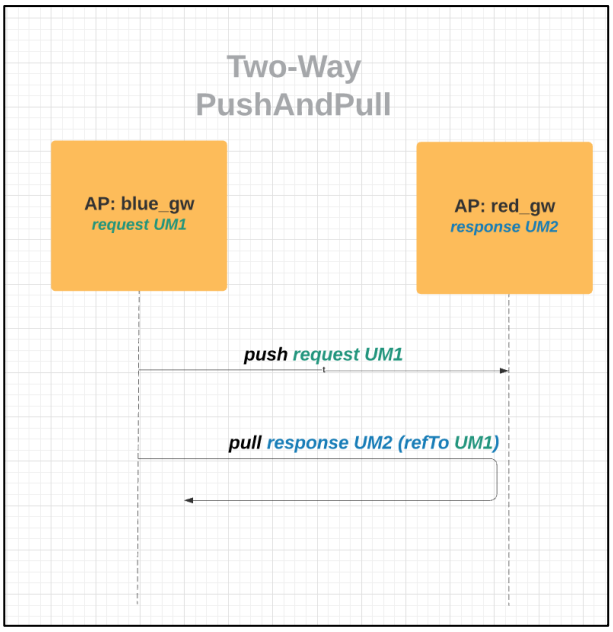
```
<process name="pushLeg1"
        mep="oneway"
        binding="push"
        initiatorRole="defaultInitiatorRole"
        responderRole="defaultResponderRole">
  <initiatorParties>
            <initiatorParty name="blue_gw"/>
  </initiatorParties>
  <responderParties>
            <responderParty name="red_gw"/>
  </responderParties>
  <legs>
            <leg name="leg1"/>
  </legs>
</process>
<process name="pushLeg2"
        mep="oneway"
        binding="push"
        initiatorRole=" defaultResponderRole "
        responderRole="defaultInitiatorRole">
  <initiatorParties>
            <initiatorParty name="red_gw"/>
  </initiatorParties>
  <responderParties>
```

```
        <responderParty name="blue_gw"/>
    </responderParties>
    <legs>
        <leg name="leg2"/>
    </legs>
</process>
```

8.2. PushAndPull binding

pushLeg1: blue_gw pushes the request UM1 on leg1

pullLeg2: blue_gw pulls the response UM2 on leg2 - requires RefToMessageId: UM1



PMode configuration:

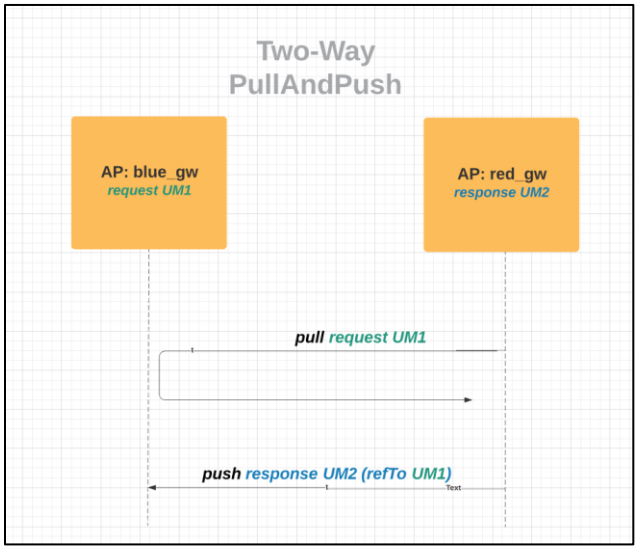
```
<process name="pushLeg1"
      mep="oneway"
      binding="push"
      initiatorRole="defaultInitiatorRole"
      responderRole="defaultResponderRole">
    <initiatorParties>
        <initiatorParty name="blue_gw"/>
    </initiatorParties>
    <responderParties>
        <responderParty name="red_gw"/>
    </responderParties>
    <legs>
        <leg name="leg1"/>
    </legs>
</process>
<process name="pullLeg2"
      mep="oneway"
      binding="pull"
```

```
        initiatorRole="defaultResponderRole"
        responderRole="defaultInitiatorRole">
    <initiatorParties>
            <initiatorParty name="blue_gw"/>
    </initiatorParties>
    <responderParties>
            <responderParty name="red_gw"/>
    </responderParties>
    <legs>
            <leg name="leg2"/>
    </legs>
</process>
```

8.3. PullAndPush binding

pullLeg1: red_gw pulls the request UM1 on leg1

pushLeg2: red_gw pushes the response UM2 on leg2 - requires RefToMessageId: UM1




```
<process name="pullLeg1"
      mep="oneway"
      binding="pull"
      initiatorRole="defaultInitiatorRole"
      responderRole="defaultResponderRole">
        <initiatorParties>
            <initiatorParty name="red_gw"/>
        </initiatorParties>
        <responderParties>
            <responderParty name="blue_gw"/>
        </responderParties>
        <legs>
            <leg name="leg1"/>
        </legs>
</process>
<process name="pushLeg2"
```

```
        mep="oneway"
        binding="push"
        initiatorRole="defaultInitiatorRole"
        responderRole="defaultResponderRole">
            <initiatorParties>
                    <initiatorParty name="red_gw"/>
            </initiatorParties>
            <responderParties>
                    <responderParty name="blue_gw"/>
            </responderParties>
            <legs>
                    <leg name="leg2"/>
            </legs>
</process>
```

9. Special Scenario: Sender and Receiver are the same

In this special scenario, the Sender Access Point acts also as the Receiver Access Point. Multiple backends can exchange messages via the same Access Point using the same or different plugins.

9.1. PMode Configuration

A party (e.g. **blue_gw**) which is Sender and Receiver must be defined in both the <initiatorParties> and <responderParties> sections as shown below:

```
.....
        <initiatorParties>
                ……
                <initiatorParty name="blue_gw"/>
                ……
        </initiatorParties>
        <responderParties>
                ……
                <responderParty name="blue_gw"/>
                ……
        </responderParties>
.....
```

9.2. Message structure

A message that is sent to the same Access Point will have to contain the same party id in both **From** and **To** sections. Below there is an example of a message sent using the Default WS Plugin:

```
<ns:UserMessage>
…
 <ns:PartyInfo>
  <ns:From>
   <ns:PartyId type="urn:oasis:names:tc:ebcore:partyid-type:unregistered">domibus-blue</ns:PartyId>
   <ns:Role>http://docs.oasis-open.org/ebxml-msg/ebms/v3.0/ns/core/200704/initiator</ns:Role>
  </ns:From>
  <ns:To>
   <ns:PartyId type="urn:oasis:names:tc:ebcore:partyid-type:unregistered">domibus-blue</ns:PartyId>
   <ns:Role>http://docs.oasis-open.org/ebxml-msg/ebms/v3.0/ns/core/200704/responder</ns:Role>
  </ns:To>
</ns:PartyInfo>
….
```

9.3. Message ID convention

Due to some limitations related to the uniqueness of the message identifier, a convention has been defined in this scenario. The message ID used for the received message is derived from the message ID used for the sent message with the following rule: the suffix ***"_1"*** is added to the sent message id.

Example:
sent message ID is **ae15851e-78fb-4b51-aac8-333c08c450d6@domibus**
received message ID is **ae15851e-78fb-4b51-aac8-333c08c450d6@domibus_1**

Remark:

The self-sending feature is meant to be used only for sanity tests. We discourage users to use self-sending in Production environments.

10. ADMINISTRATION TOOLS

10.1. Administration Console

Domibus administration console can be used by administrators and users to easily manage Domibus application.

The administration dashboard is reachable via the following URLs:

- http://your_server:your_port_number/domibus (Tomcat, WildFly and WebLogic)

The admin console is made of several sections:

Messages

On this page, the administrator can see the details of the messages and re-process them if required. The administrator can also navigate through the messages history and download specific messages if needed.

Message Filter

On this page, the administrator can set defined filters and access them individually for edition directly in the list.

Error Log

On this page, the administrator can view the list of application errors, make searches on error messages and filter them.

PMode

On this page, the administrator can upload or download the PMode file. The administrator can edit the list of parties configured in the PMode and access them individually for modification purposes.

JMS Monitoring

On this page, the administrator can monitor and manage the contents of the JMS queues.

Truststore

On this page, the administrator can upload a new truststore to replace the current one.

Users

On this page, the administrator can create and manage users including: grant access rights, change passwords, assign roles, etc.

Plugin Users

On this page, the administrator can manage the plugin users: create, delete, edit, grant access rights and roles, etc.

Audit

On this page, the administrator has an overview of changes performed in the PMode, Parties, Message Filter and Users pages.

Alerts

This page displays the alerts generated by Domibus in case of unusual behaviour of the application. The alerts are configured by the administrator.

Test Service

On this page the administrator can perform basic test of the communication configuration between two access points.

Change Password

It is accessible from the hamburger menu found at the top-right corner of the screen. On this page the administrator can change his/her password if it is about to expire. This page is displayed also automatically, after the login, if the user has the default password.

10.2. Multitenancy

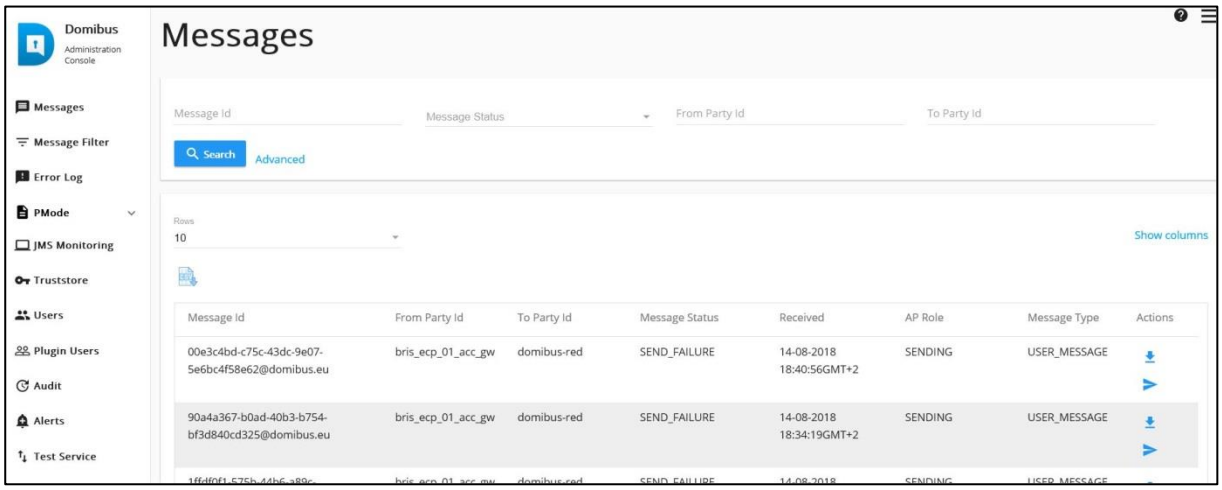
In Multitenancy mode, each tenant domain has its own set of configuration files: Keystore, Truststore, PMode, Domain properties, etc. Users are defined for each tenant domain.

The user named **super** with role **ROLE_AP_ADMIN**, has the privileges to access all the available domains.

When logged as **super**, you are able to select a specific tenant domain in the upper right part of the admin console in a drop-down list (default or dom50 domain in the example below):

10.3. Message Log

Domibus administration dashboard includes a message logging page that gives the administrator information related to sent messages, received messages and their status (SENT, RECEIVED, FAILED, ACKNOWLEDGED, etc.):



The following state machines illustrate the evolution of the processing of messages according to the encountered events:

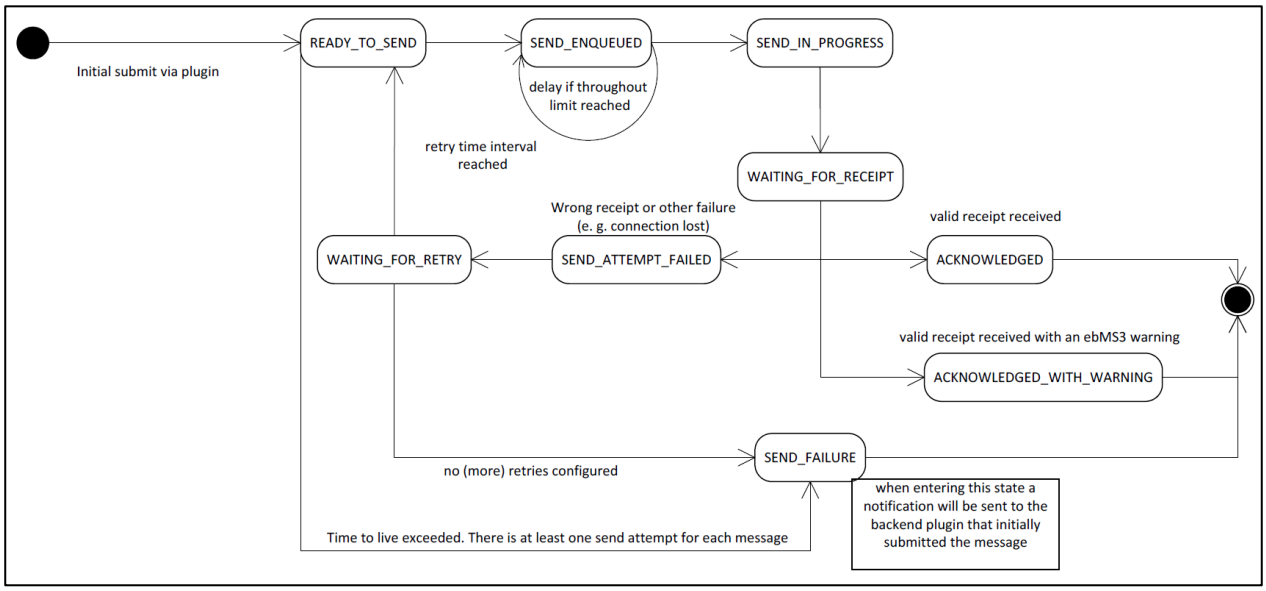


Figure 5 - State machine of Corner 2 (sending access point)

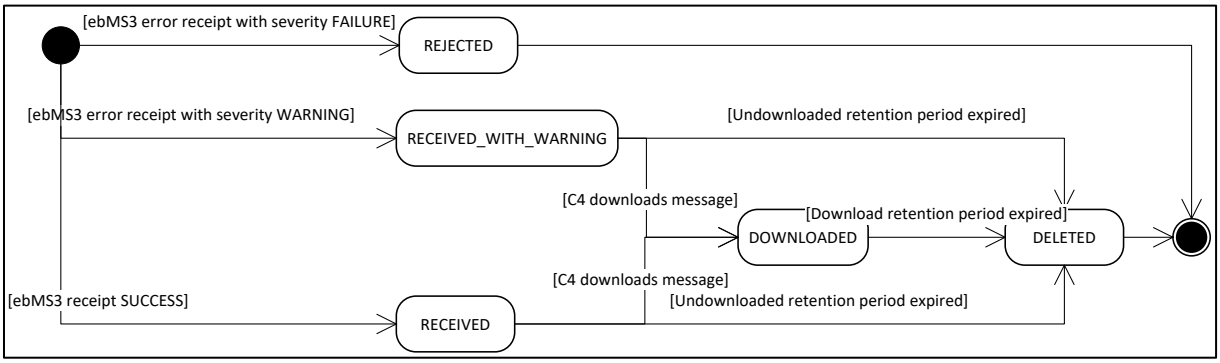


Figure 6 - State machine of Corner 3 (receiving access point)

10.4. Message Filtering

Domibus allows the routing of messages to different plugins, based on some messages attributes:

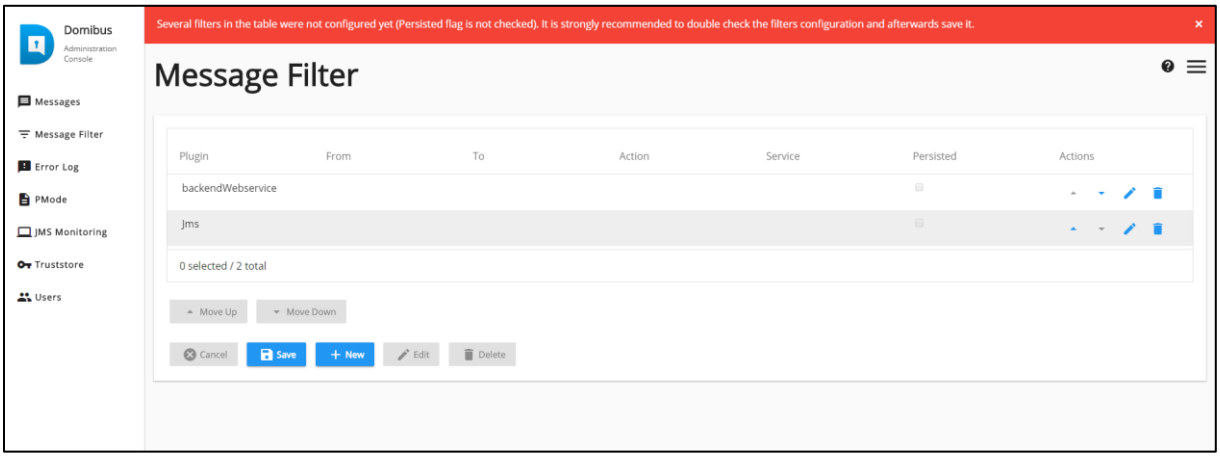
- **From** : initial sender (C1)
- **To** : final recipient (C4)
- **Action**: defined as 'Leg' in the PMode
- **Service**: as defined in the PMode

The following rules apply:

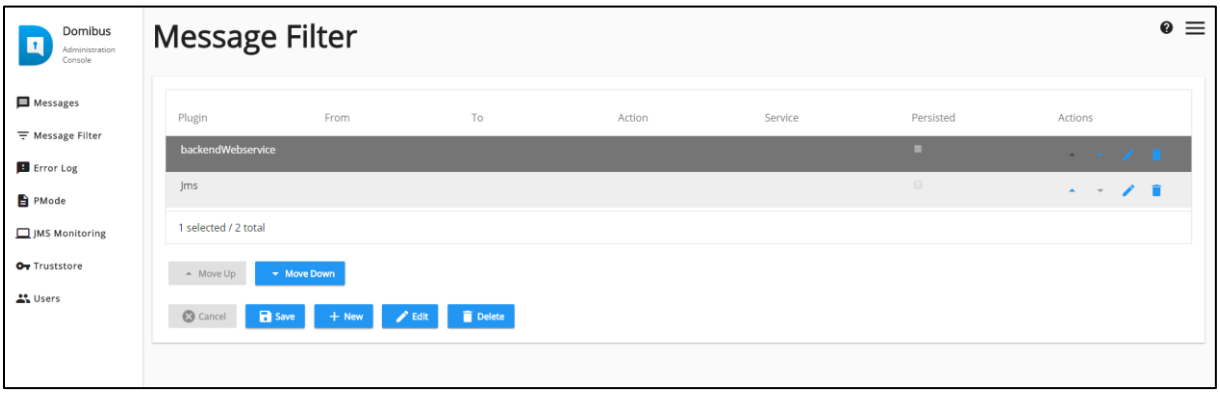
- Domibus considers the ordered list of 'filters' to route all messages. The first filter matching the filter criteria, will define the target plugin. The order of the plugin is therefore important in the routing process.

  Note 1: if the filters are all mutually exclusive, the order would not matter.

  Note 2: The 'Persisted' column indicates if the plugin filter configuration has already been saved. If a plugin filter configuration has not already been saved, the 'Persisted' value is unchecked and an error message is shown on the top of the screen. In this case, it is strongly recommended to review the filters configuration and save it afterwards.



- One plugin may be applied to multiple filters. This is done by the use of the 'OR' criteria.
  (cf. backendWebservice in the example below).
- Multiple attributes could also be defined in one filter. This is done by the use of the 'AND' criteria.
  (cf. the first filter in the example below).
- One filter may have no criteria, meaning that all messages (not matching previous filters) will be routed to the corresponding plugin automatically. As a result, subsequent filters will therefore not be considered for any incoming message. In the example below, the last filter routes all remaining messages to plugin 'backendWebservice'.



Use the **New** and **Delete** buttons to create or delete a filter.

As the order matters, move up and down actions allow placing each filter in the right order:

Cf. **Move Up** and **Move Down** buttons.

After some changes have been applied to the filters, the **Cancel** and **Save** buttons become active:

- Press **Cancel** to cancel the changes
- Press **Save** to save the changes and activate them immediately.

The console will ask the user to confirm the operation, before proceeding.

Example of message attributes used for routing and matching the first filter used in the example above:

- **Action** : *TC1Leg1*
- **Service** : *bdx:noprocess:tc2*
- **From** : domibus-blue:urn:oasis:names:tc:ebcore:partyid-type:unregistered
- **To** : domibus-red:urn:oasis:names:tc:ebcore:partyid-type:unregistered

That information can be found in the incoming message received by Domibus (e.g. see below):

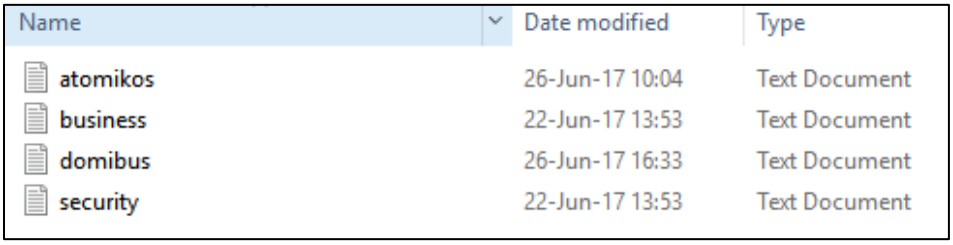
```
<ns:PartyInfo>
        <ns:From>
          <ns:PartyId type="urn:oasis:names:tc:ebcore:partyid-type:unregistered">domibus-
blue</ns:PartyId>
          <ns:Role>http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/initiator</ns:Role>
        </ns:From>
        <ns:To>
          <ns:PartyId type="urn:oasis:names:tc:ebcore:partyid-type:unregistered">domibus-
red</ns:PartyId>
          <ns:Role>http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/responder</ns:Role>
        </ns:To>
</ns:PartyInfo>
      <ns:CollaborationInfo>
        <ns:Service type="tc1">bdx:noprocess</ns:Service>
        <ns:Action>TC1Leg1</ns:Action>
      </ns:CollaborationInfo>
```

10.5. Application Logging

10.5.1. Domibus log files

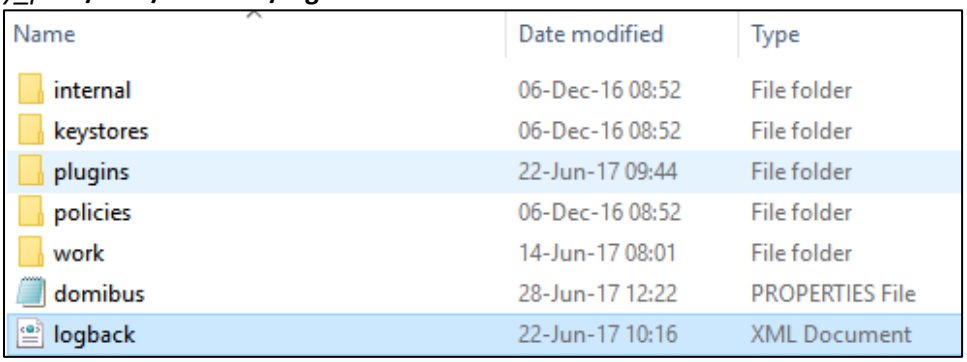
Domibus has three log files:

1. domibus-security.log : this log file contains all the security related information. For example, you can find information about the clients who connect to the application.
2. domibus-business.log: this log file contains all the business related information. For example, when a message is sent or received, etc.
3. domibus.log : this log file contains both the security and business logs plus miscellaneous logs like debug information, logs from one of the framework used by the application, etc.



10.5.2. Logging properties

It is possible to modify the configuration of the logs by editing the logging properties file: *cef_edelivery_path***/conf/domibus/logback.xml**:



10.5.3. Error Log page

To go to the error log page of the Domibus Admin Console, click on the **Error log** menu entry.

This option lists all the Message Transfers error logs and includes the **ErrorSignalMessageId**, **ErrorDetail** and **Timestamp**. You can sort messages by using the up or down arrow to search for a specific message.

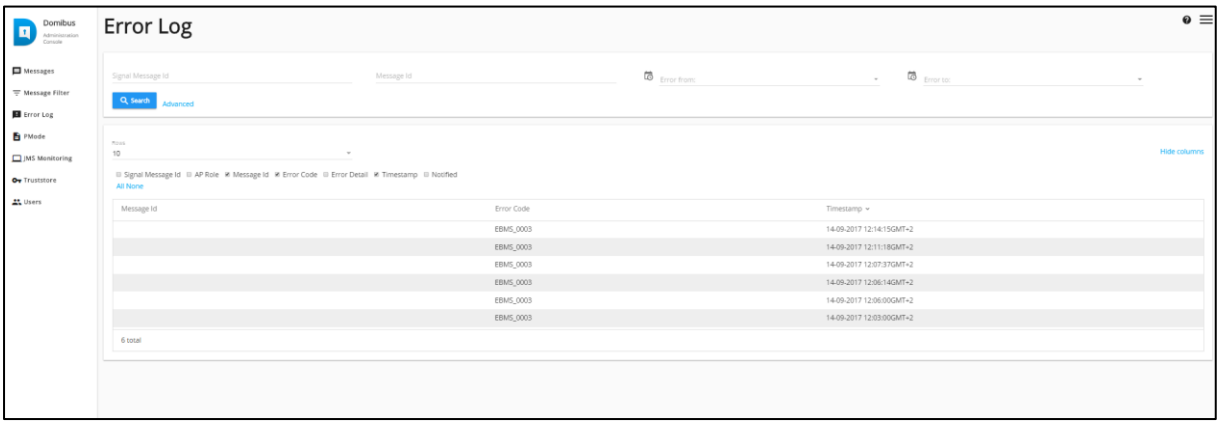


Figure 7 - Domibus – Error Log page

10.6. PMode

In the Administration console you can view the content of the current PMode:

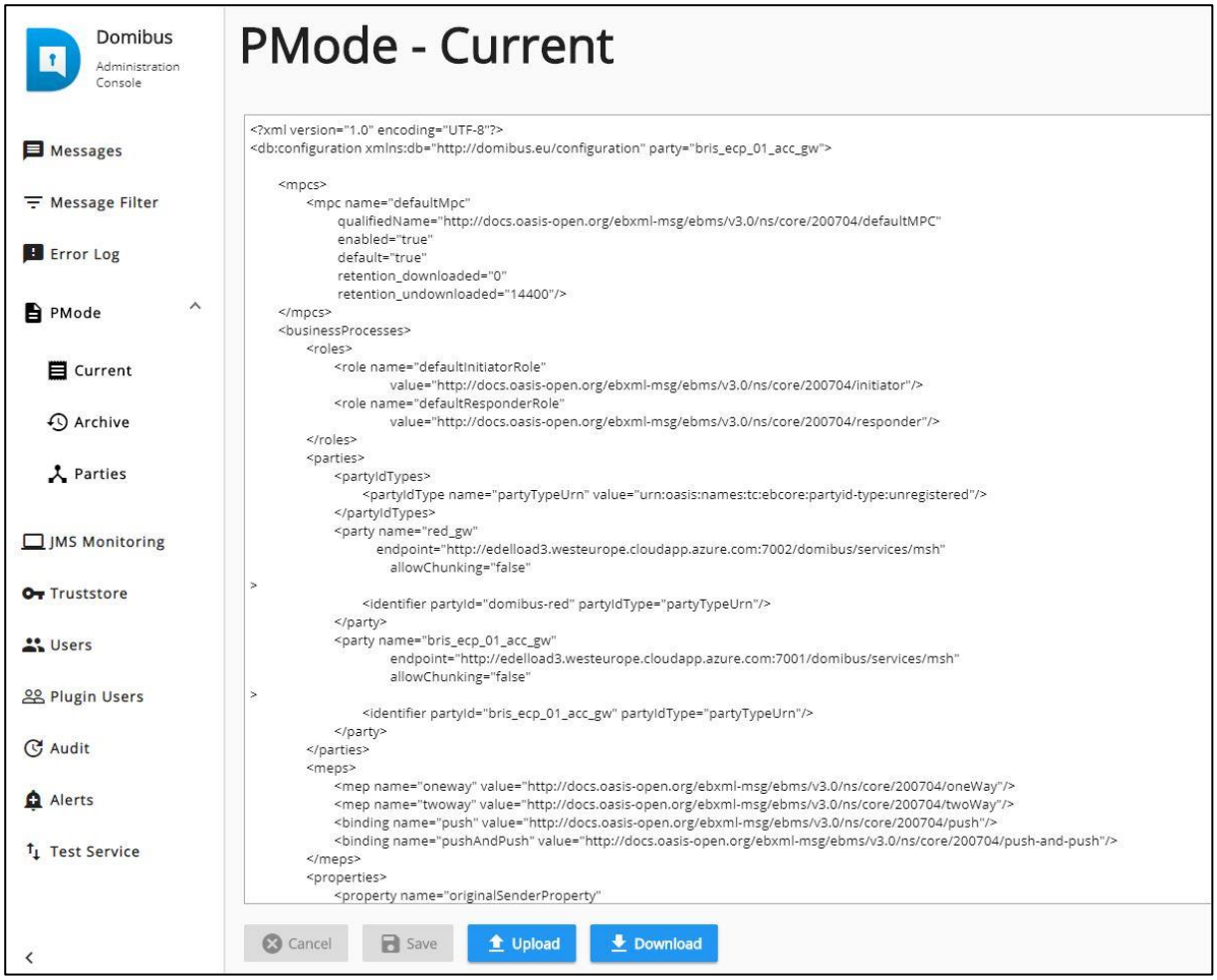
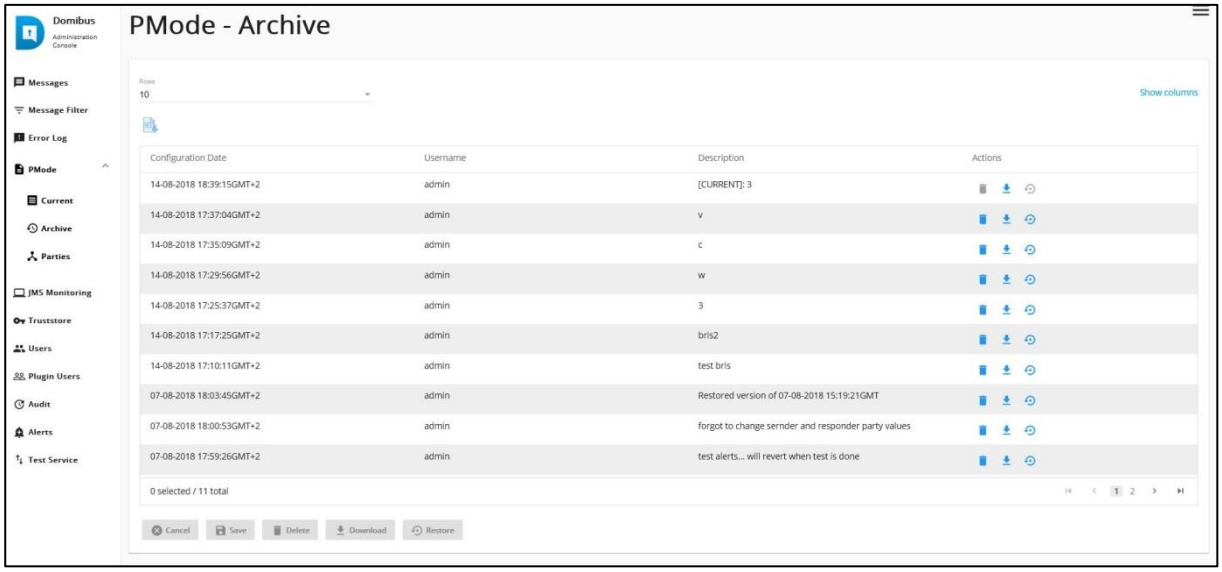


Figure 8 – Pmode page

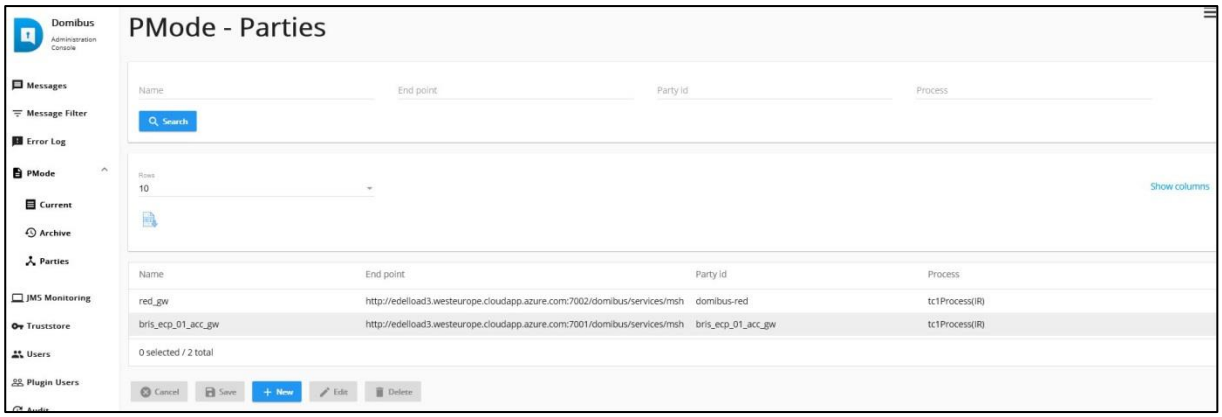
You can edit the content of your current PMode in the administration console and save the changes by clicking on **Save** or discard the changes by clicking on **Cancel**. You can **upload** a PMode file or **download** the current one.

Under **Archive** the history of the PMode changes is displayed:



Domibus keeps a snapshot of the Pmode each time the PMode is modified. The user can restore a particular version and make it the current PMode nu clicking on the restored button at the far right of the table.

Under Parties, the user can manage the parties in the PMode. Parties can be searched using filter criteria, they can be added, updated or deleted.



The PMode is updated and a new PMode snapshot is created when parties are added, updated or deleted.

10.7. Queue Monitoring

REMARK:
To prevent the user from moving messages from any queue to any other queue:

- The user should be able to move messages only to the original queue which can be retrieved from the JMS Messsage properties.
- In case the original queue cannot be determined, the user can move to any queue the message except the source.
- In case of more than one message to be moved, all messages have to have the same original queue. Otherwise, an error message is displayed.
- In case the original queue is the same as the source queue, error message is shown.

Domibus uses the following JMS queues to handle the messages:

Destination type	JNDI name	Comment	Description
Queue	jms/domibus.internal.dispatch.queue	No redelivery because redelivery of MSH messages is handled via ebMS3/AS4	This queue is used for scheduling messages for sending via the MSH.
Queue	jms/domibus.internal.notification.unknown		Notifications about received messages (by the MSH) that do not match any backend routing criteria will be sent to this queue. In production environment this queue should be monitored in order to handle those messages manually.

Topic	jms/domibus.internal.command		This topic is used for sending commands to all nodes in a cluster. For example, it is used after a PMode was uploaded in order to notify all nodes to update their PMode cache (in case caching is enabled).
Queue	jms/domibus.backend.jms.replyQueue		This queue is used for sending replies back to the sender of a message. Replies contain: a correlationId, ebMS3 messageId (if possible), error messages (if available).
Queue	jms/domibus.backend.jms.outQueue		Messages received by the MSH (that match the routing criteria for the JMS plugin) will be sent to this queue.
Queue	jms/domibus.backend.jms.inQueue		This queue is the entry point for messages to be sent by the sending MSH.
Queue	jms/domibus.backend.jms.errorNotifyConsumer		This queue is used to inform the receiver of a message that an error occurred during the processing of a received message.

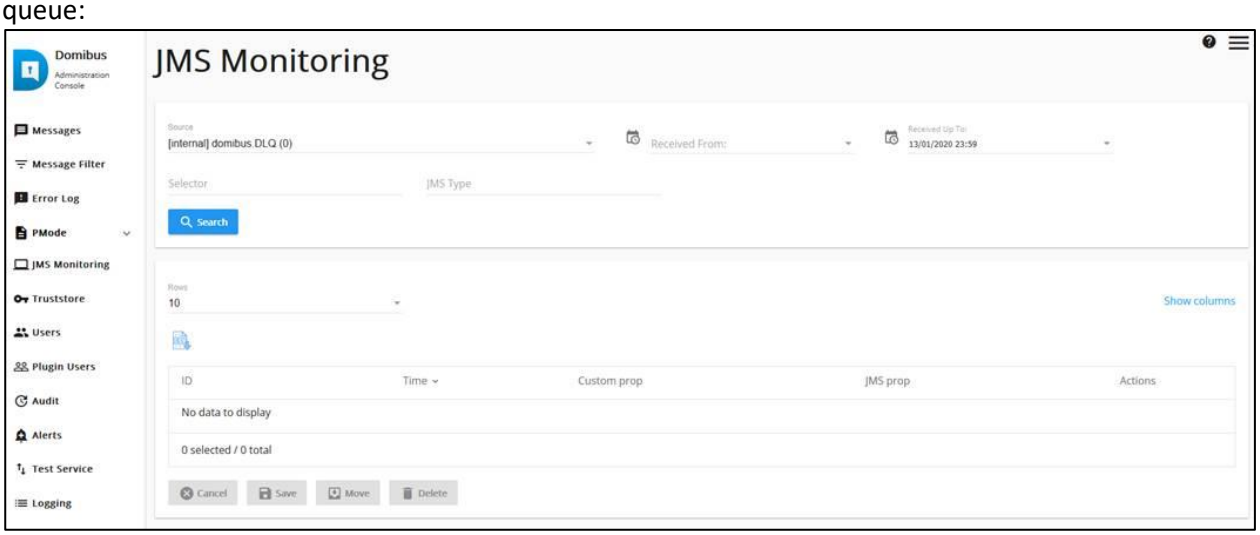
Queue	jms/domibus.backend.jms.errorNotifyProducer		This queue is used to inform the sender of a message that an error occurred during the processing of a message to be sent.
Queue	jms/domibus.notification.jms		Used for sending notifications to the configured JMS plugin.
Queue	jms/domibus.internal.notification.queue		This queue is used to notify the configured plugin about the status of the message to be sent.
Queue	jms/domibus.notification.webservice		Used for sending notifications to the configured WS plugin.
Queue	jms/domibus.DLQ		This is the Dead Letter Queue of the application. The messages from other queues that reached the retry limit are redirected to this queue.

Table 3 - Queue Monitoring

All these queues can be monitored and managed using the **JMS Monitoring** page, which is accessible from the **JMS Monitoring** menu of the administration console:

Warning:
For Tomcat server, the maximum number of shown messages in the queue monitoring is defined by the 'domibus.listPendingMessages.maxCount' property.

In the **Source** field, we have all the queues listed, along with the number of messages pending in each queue:



If a queue is used internally by the application core, its name will start with **[internal].** A regular expression is used to identify all the internal queues. The value for this regular expression can be adapted in the **domibus.jms.internalQueue.expression** property from the *cef_edelivery_path***/conf/domibus/domibus.properties** file.

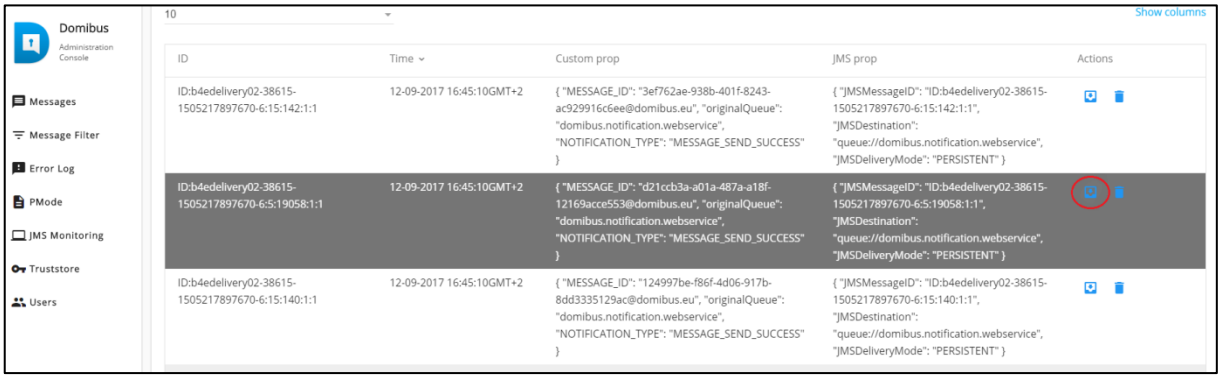
In the **JMS Monitoring** page the following operations can be performed:

1. Inspecting and filtering the messages from a queue based on the fields:
    - **JMS type**: the JMS header
    - **Selector**: in this field you can enter any JMS message properties with the correct expression to filter on it

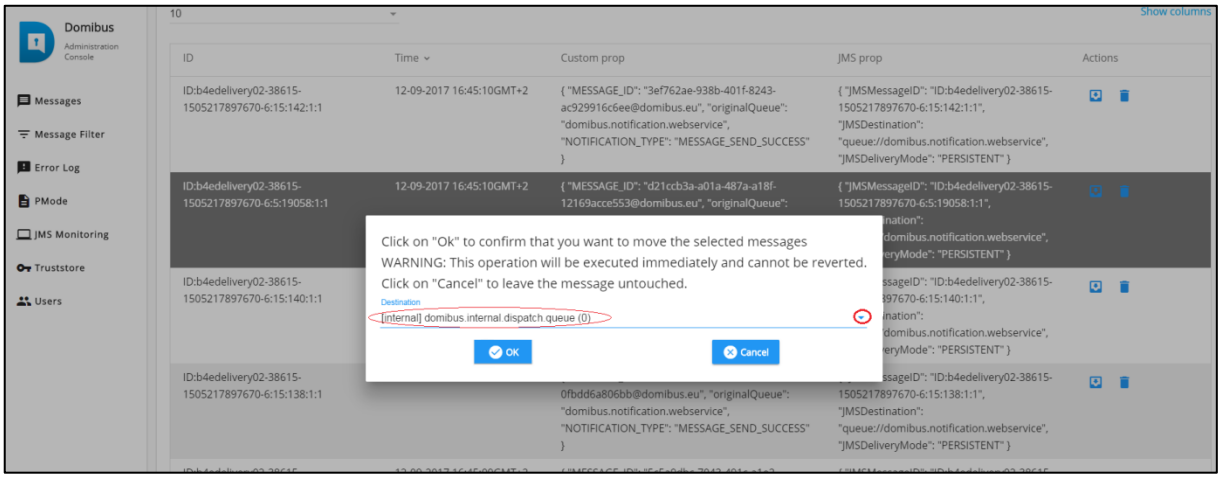
Remark:

For more information on the JMS message headers and the JMS message selector, please check the official documentation at https://docs.oracle.com/cd/E19798-01/821-1841/bnces/index.html.

2. Move a message:
    a. Move the message from the DLQ to the original queue:
        - Select the JMS message from the DLQ and press the **Move** icon (**in RED marker**):

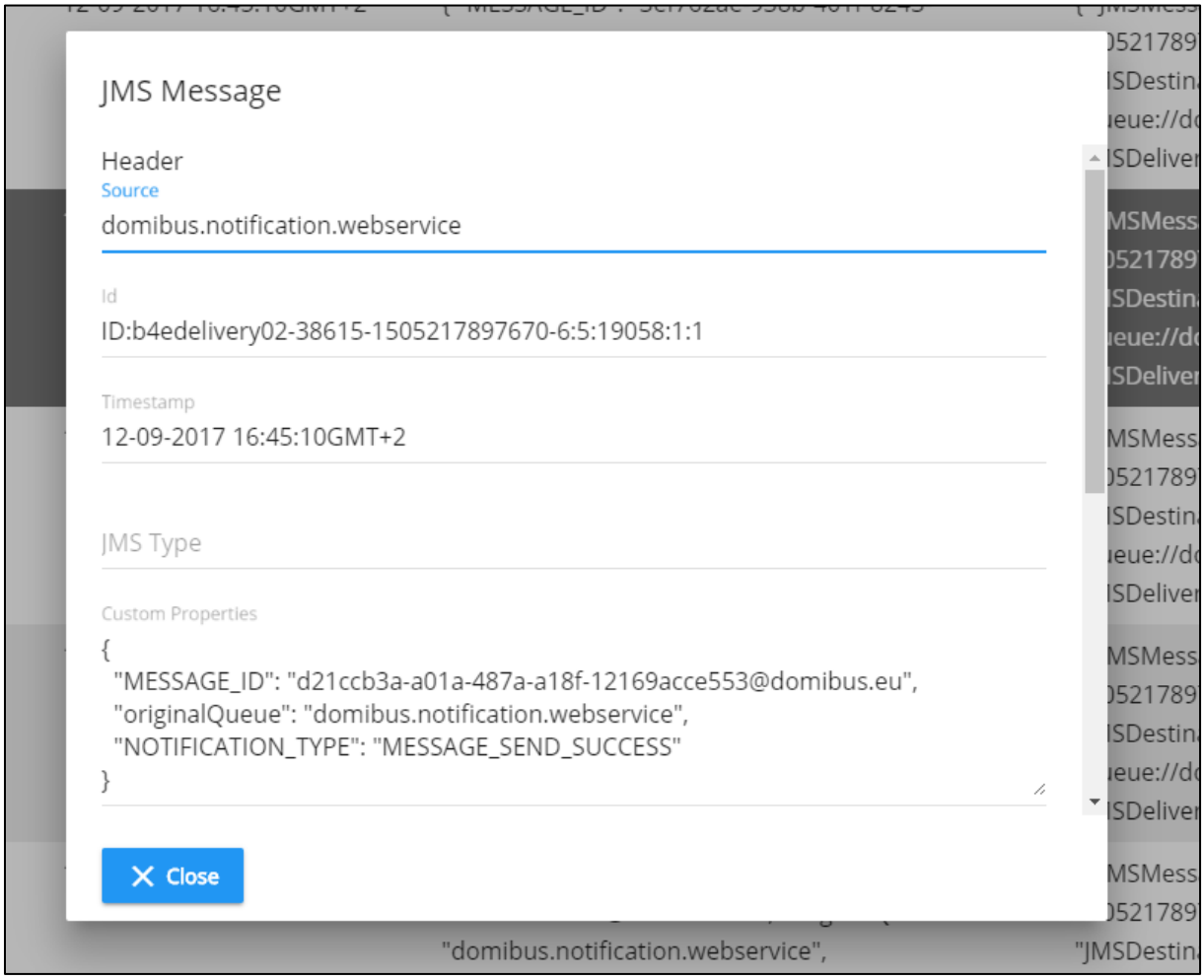


- Select the original queue from the **Destination** dropdown list in the dialog box:



- Press the **Ok** button in the dialog, and the message will be moved to the original queue.

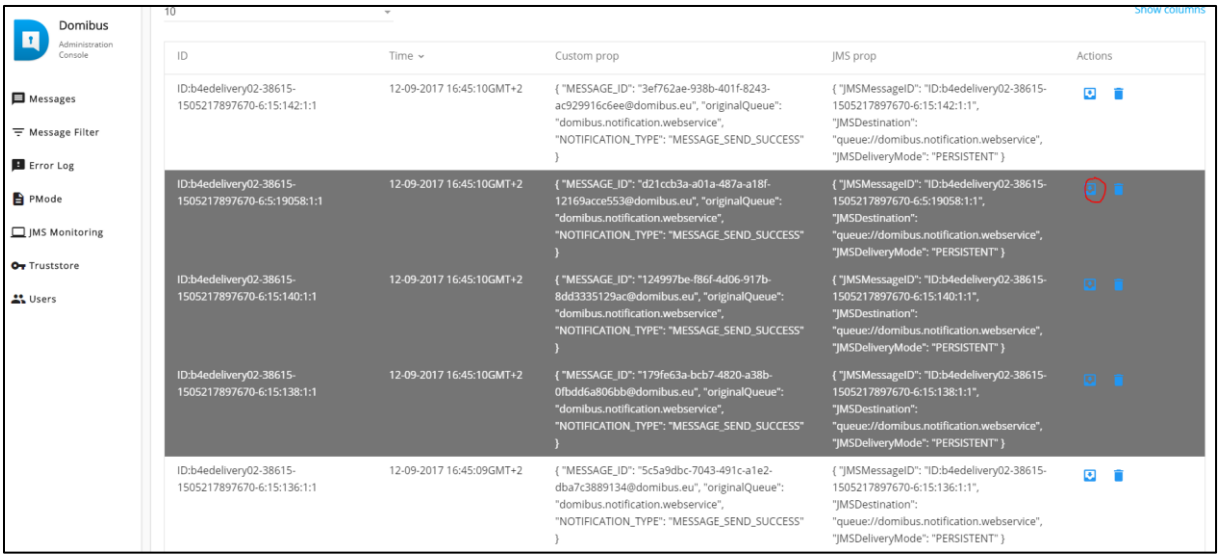
Note: the details of a message can be viewed by selecting it (double-clicking) from the message list:



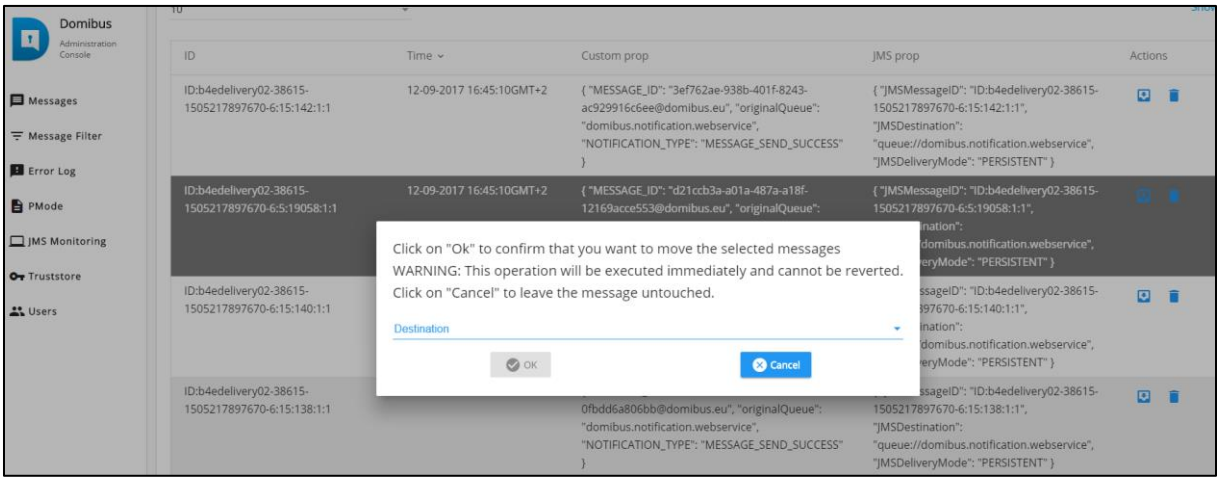
Click **Close** to exit the dialog box.

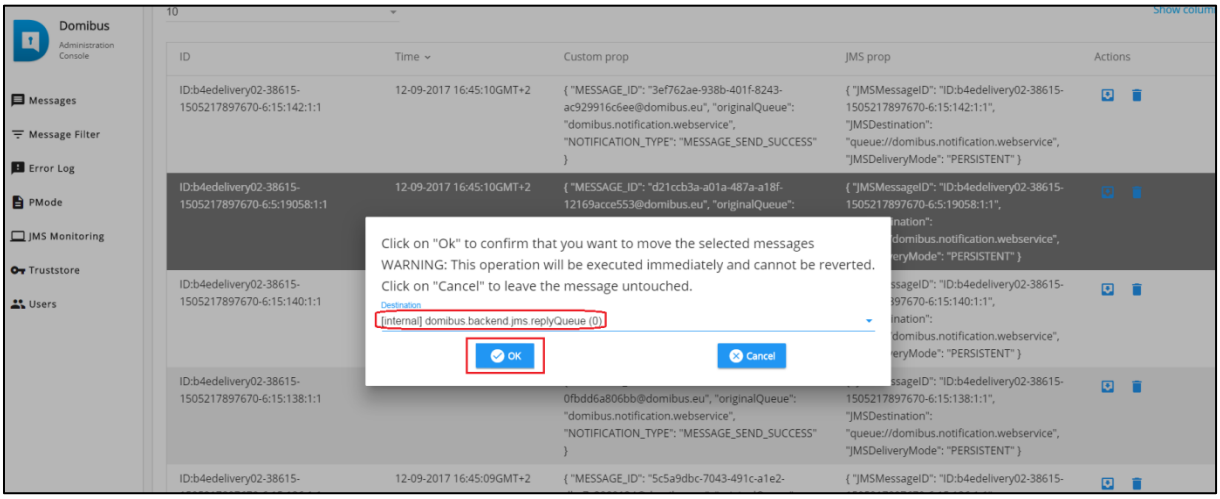
b. Move multiple messages from the DLQ to the original queue:

- Select multiple JMS messages from the DLQ and press the **Move** icon button:



- Select the original queue from the Destination dropdown list, and click **Ok**.

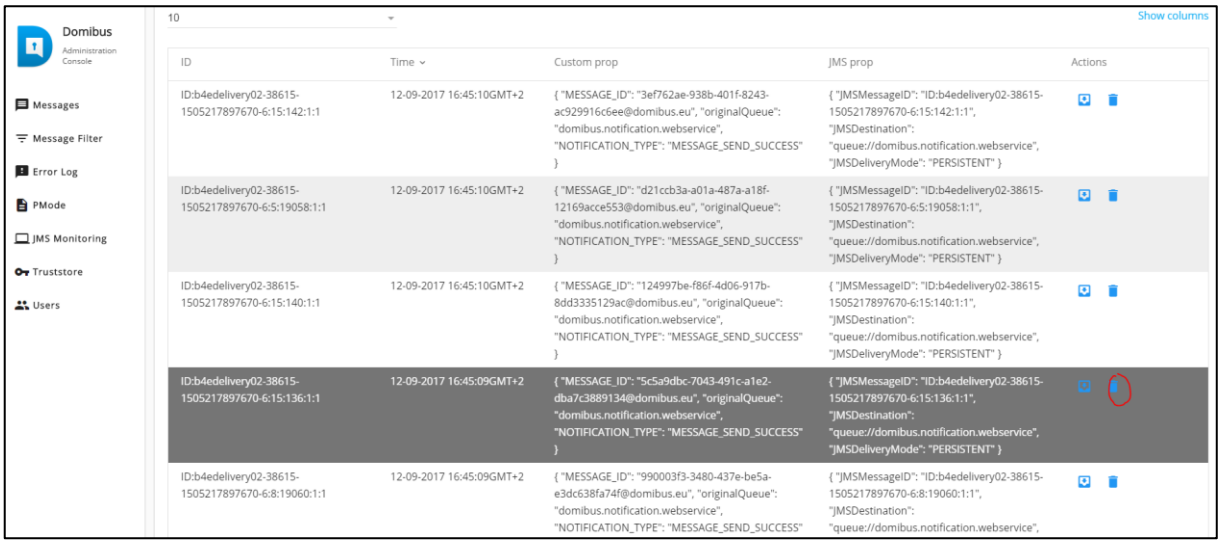




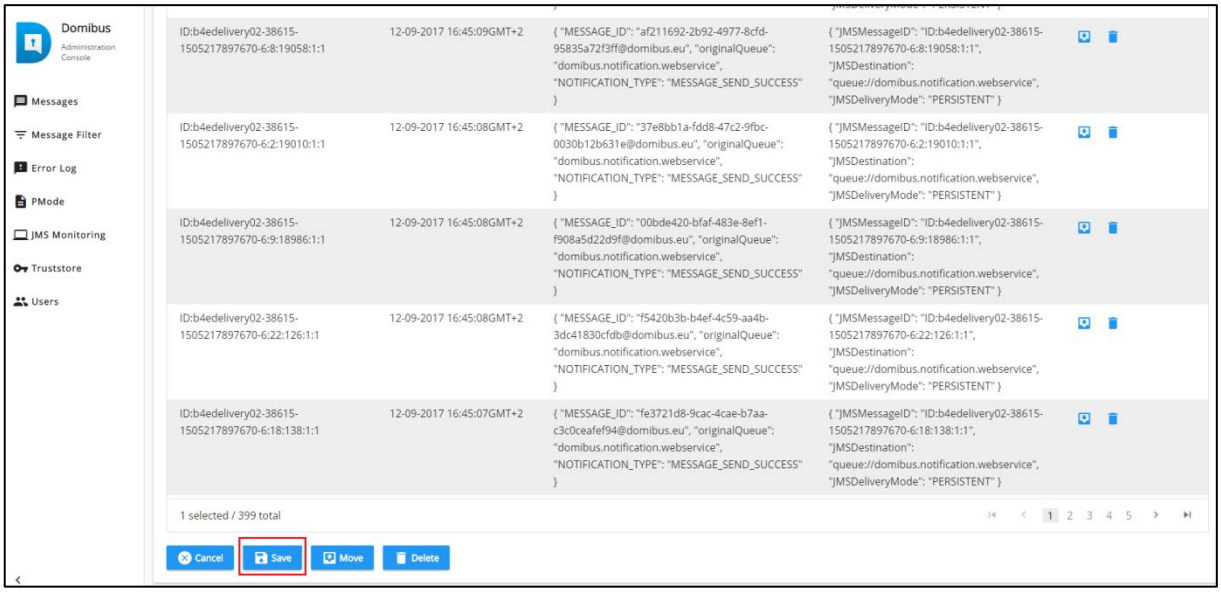
***Remark**:*

Please make sure that all the selected messages came from the same source queue. Use the filtering capabilities to ensure this.

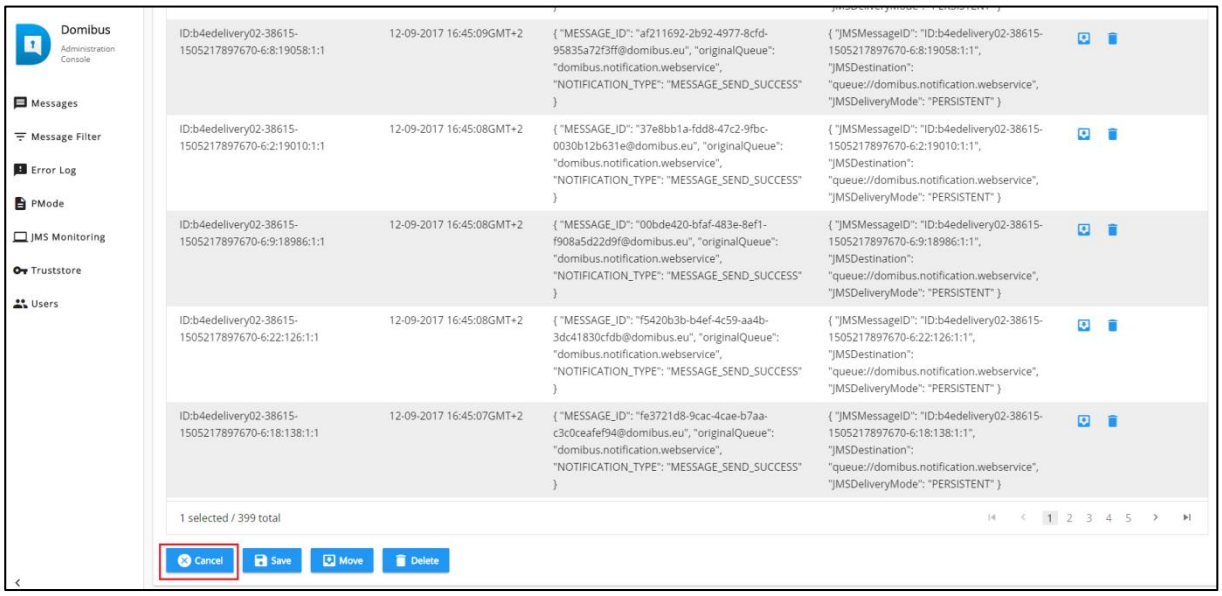
3. Delete message(s): delete one or more messages from one queue:
   - Select one or several JMS messages from the source queue and press the **Delete** button:



   - By clicking the **Delete** button, the selected messages are removed from the screen, but you still have to confirm your changes by clicking on the **Save** button. As long as you have not clicked on the **Save** button, your changes are not taken into account in the system.



   - To cancel the changes you made, click on the **Cancel** button instead:



10.8. Configuration of the queues

Queues should be configured appropriately and according to the backend system needs and re-delivery policy.

10.8.1. Tomcat

Domibus uses ActiveMQ as JMS broker. The various queues are configured in the *cef_edelivery_path***/conf/domibus/internal/activemq.xml** file.

Please see ActiveMQ redelivery policy and configure the parameters below if needed:

```
<redeliveryPlugin fallbackToDeadLetter="true"
            sendToDlqIfMaxRetriesExceeded="true">
  <redeliveryPolicyMap>
    <redeliveryPolicyMap>
      <defaultEntry>
                    <!-- default policy-->
                    <redeliveryPolicy maximumRedeliveries="10"      redeliveryDelay="300000"/>
          </defaultEntry>
      <redeliveryPolicyEntries>
          <redeliveryPolicy queue="domibus.internal.dispatch.queue" maximumRedeliveries="0"/>
          <redeliveryPolicy queue="domibus.internal.pull.queue" maximumRedeliveries="0"/>
</redeliveryPolicyEntries>
    </redeliveryPolicyMap>
  </redeliveryPolicyMap>
</redeliveryPlugin>
```

Access to the JMS messaging subsystem is protected by a username and a password in clear text defined in the domibus.properties file *cef_edelivery_path***/conf/domibus/domibus.properties**.
It is recommended to change the password for the default user:

```
activeMQ.username=domibus
activeMQ.password=changeit
```

Remark:

*The user (**activeMQ.username**) and the password (**activeMQ.password**) defined in the **domibus.properties** file are referenced in the authentication section of the **activemq.xml** file provided.*

10.8.2. WebLogic

Please use the admin console of WebLogic to configure the re-delivery limit and delay if necessary.

10.8.3. WildFly

Please use the admin console of WildFly to configure the re-delivery limit and delay if necessary.

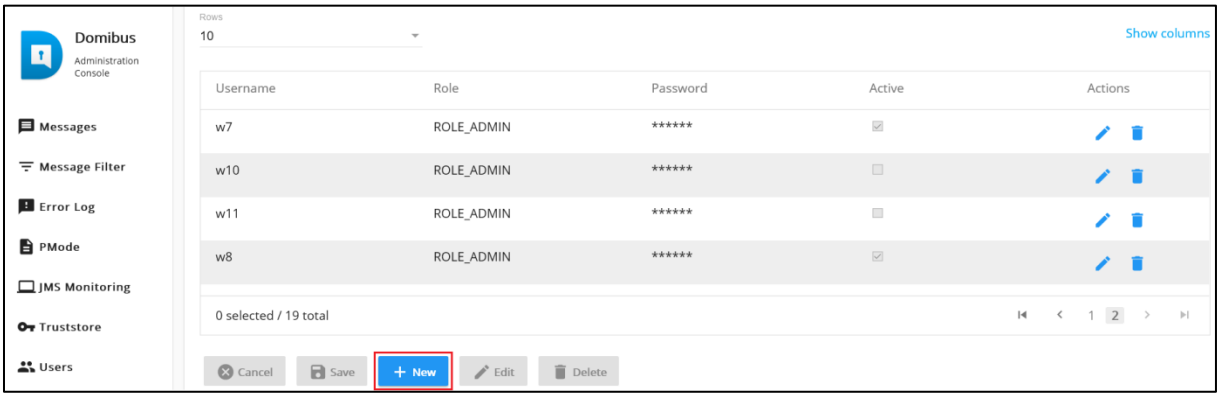
10.9. Truststore

In the Truststore screen, you can manage the trusted certificates. You can upload a new truststore to replace the current one and define its password.

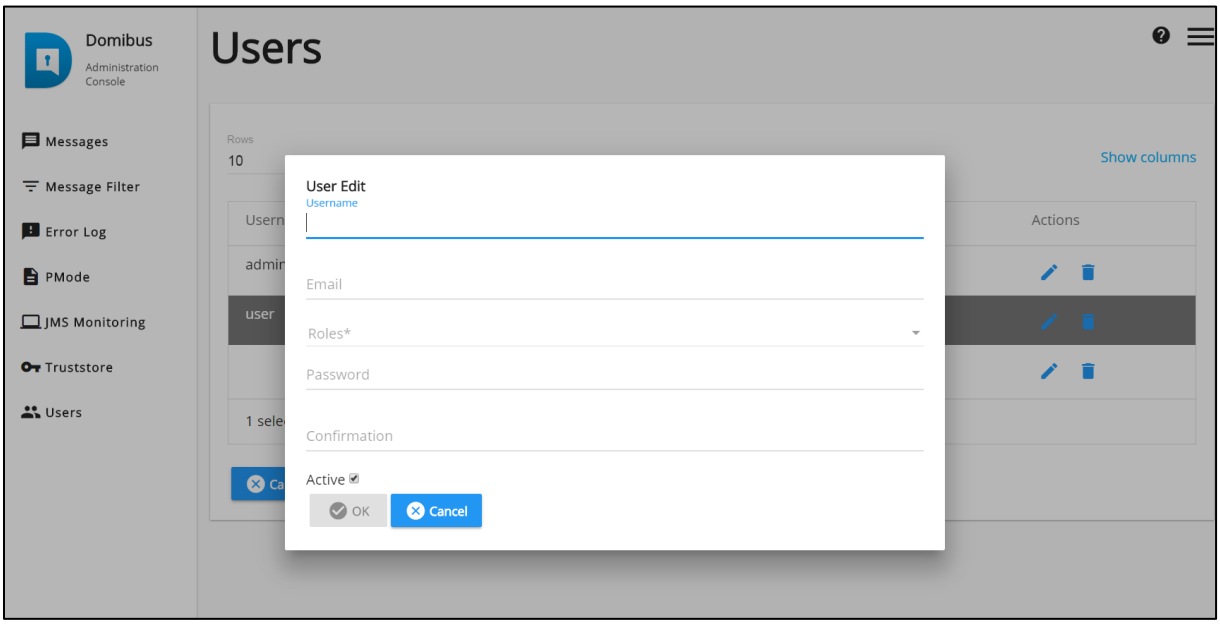
10.10. Users

10.10.1. Adding new users

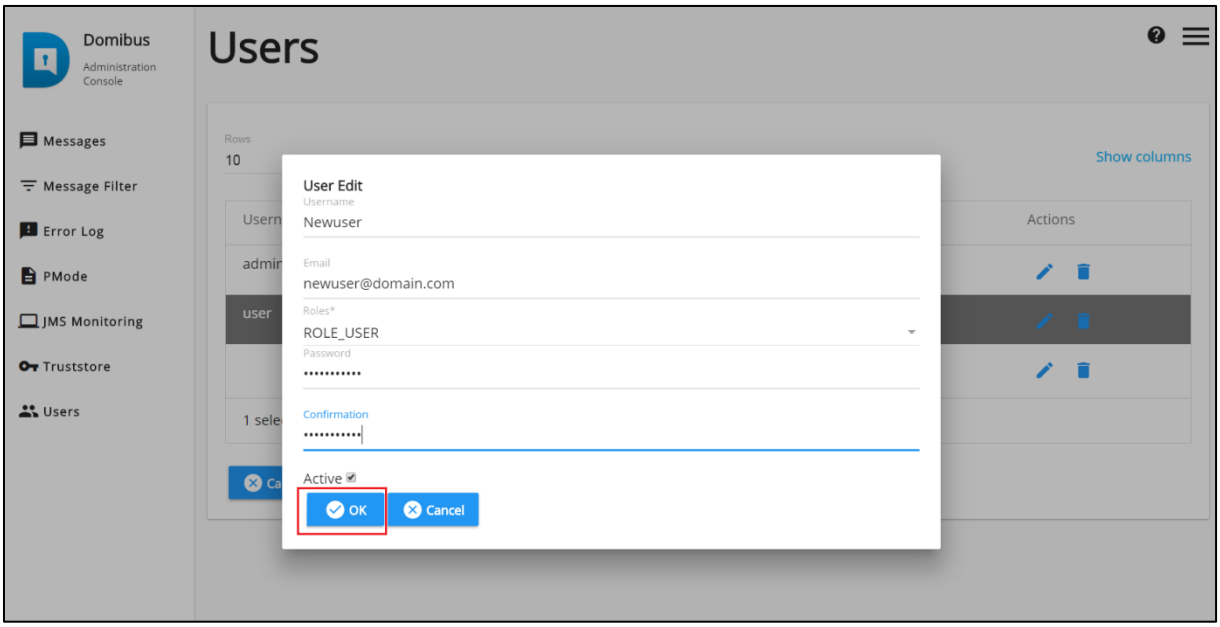
1. New users can be added to the existing default users (**admin** and **user**) by clicking on **New**:



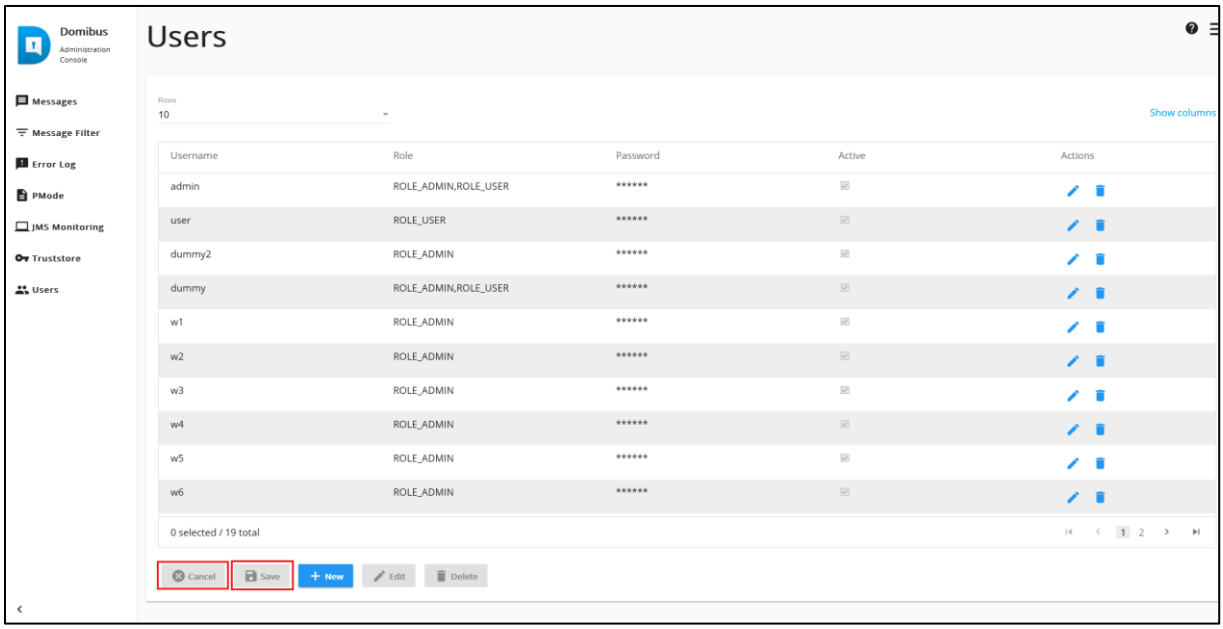
2. For each new user, you must enter a username, an email, a role and a password:


Domibus
Administration Console
Users
Messages
Message Filter
Error Log
PMode
JMS Monitoring
Truststore
Users
Rows
10
Show columns
Actions
User Edit
Username
Email
Roles*
Password
Confirmation
Active
OK
Cancel

3. Click on **OK**:


Domibus
Administration Console
Users
Messages
Message Filter
Error Log
PMode
JMS Monitoring
Truststore
Users
Rows
10
Show columns
Actions
User Edit
Username
Newuser
Email
newuser@domain.com
Roles*
ROLE_USER
Password
Confirmation
Active
OK
Cancel

4. Again, once the user has been created, do not forget to click on the **Save** button on the **Users** page to register your changes on the system:

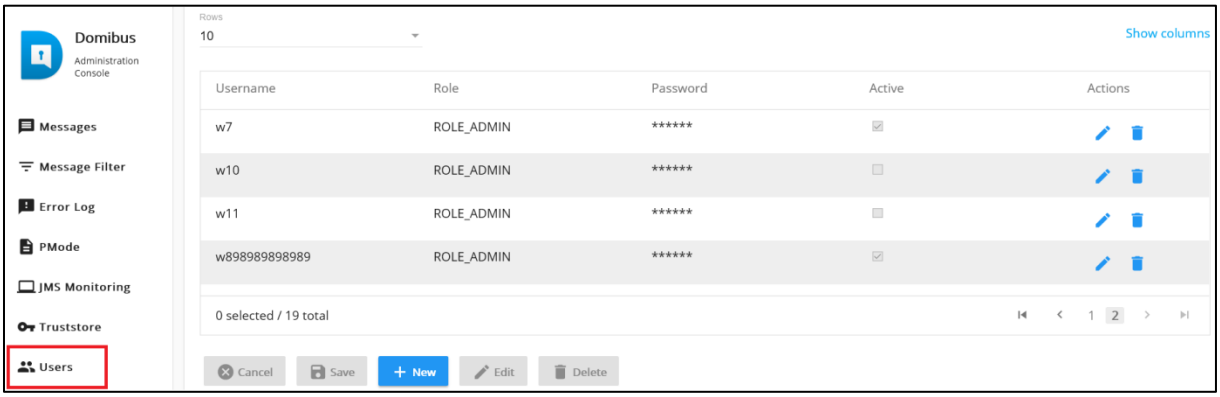


10.10.2. Changing passwords

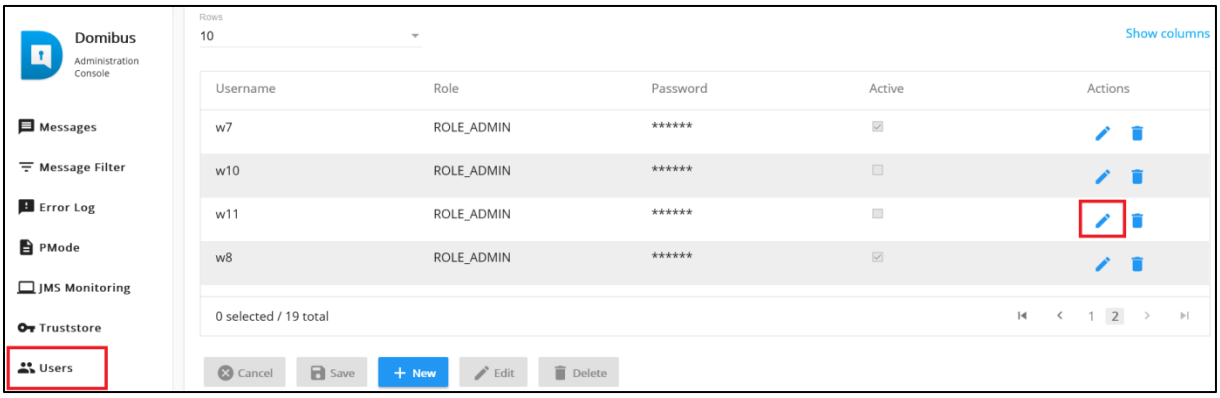
All user passwords have an expiration period, configured in the domibus properties. Some days before expiring (also configured in properties), the user receives a warning after the login and also an alert. The new password cannot be one of the last 5 used passwords (the number can be configured). Also, the password must meet complexity rules configured in the properties. If it does not meet them than an error message is displayed (can also be configured).

The passwords of the default users (admin, user and super users) automatically expire after 3 days. This period can be configured. Once logged-in with the default password, the system redirects the user to the Change Password page so that he/she can immediately change it. The default password check can be disabled from the properties.

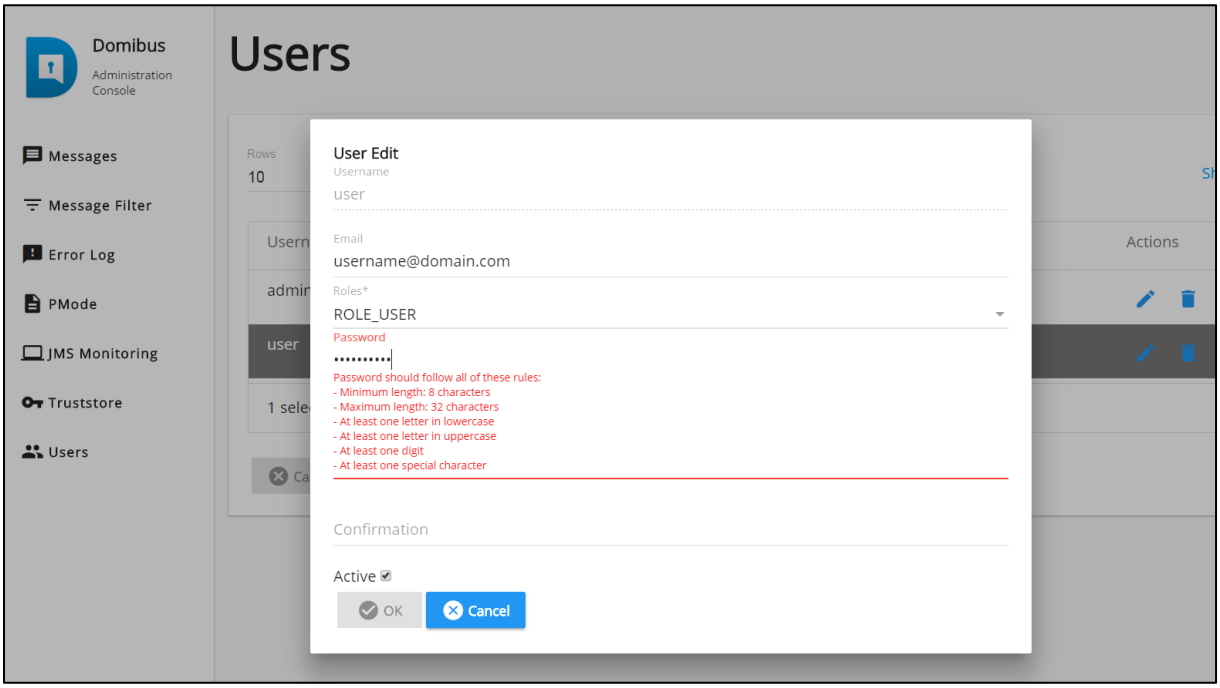
1. In order to change the password for a user, navigate to the **Users** menu entry to obtain the list of configured users:



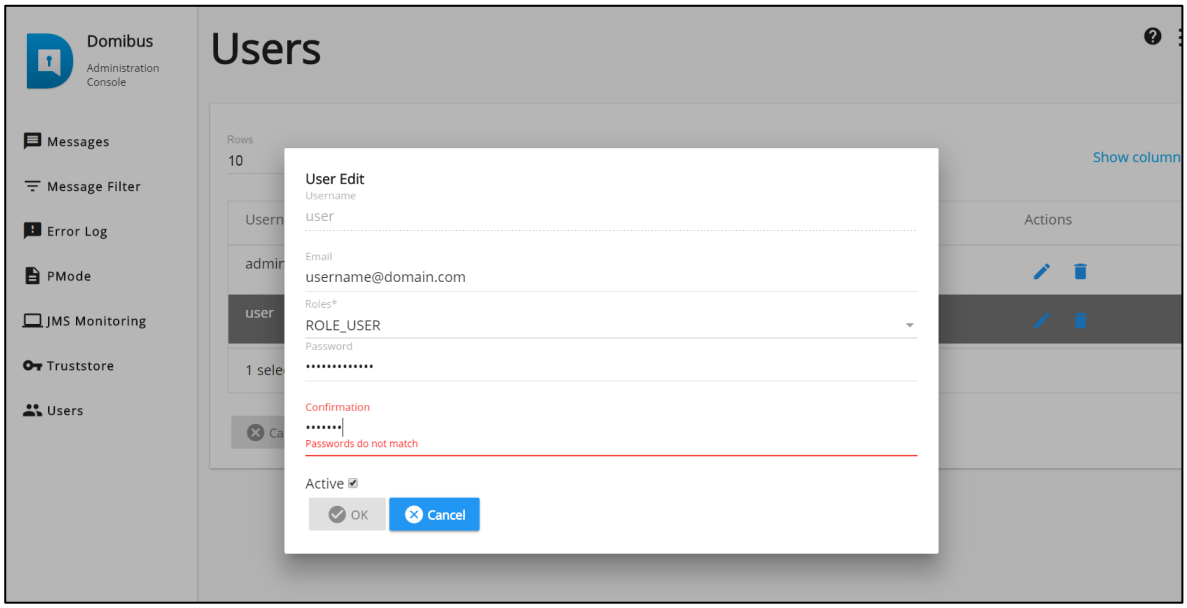
2. To edit the user details, click on the **EDIT** icon (in **RED**). DO NOT click on the BIN icon as this would DELETE the record.



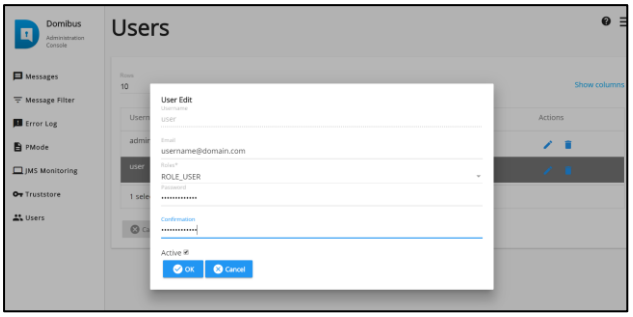
3. In the popup window, choose a new password using the rules shown:



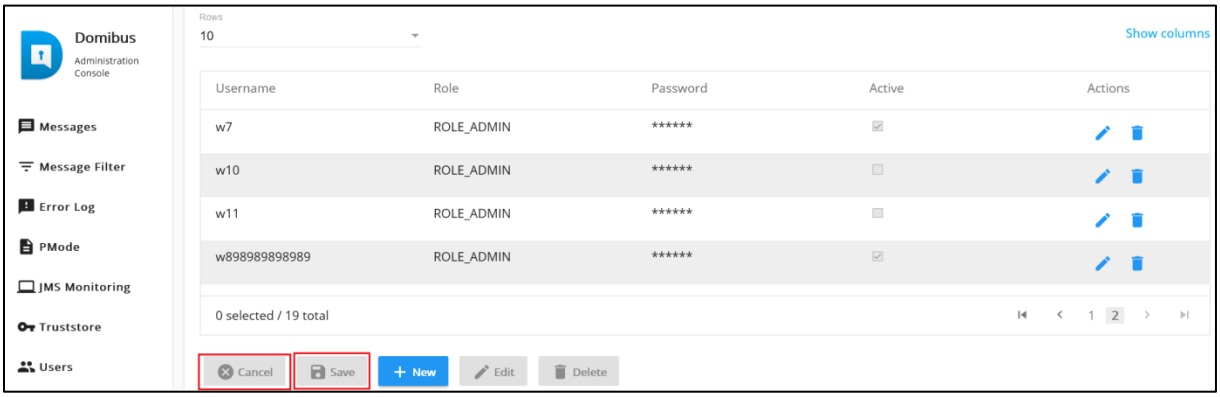
4. Confirm the password:



5. Click on **OK**:

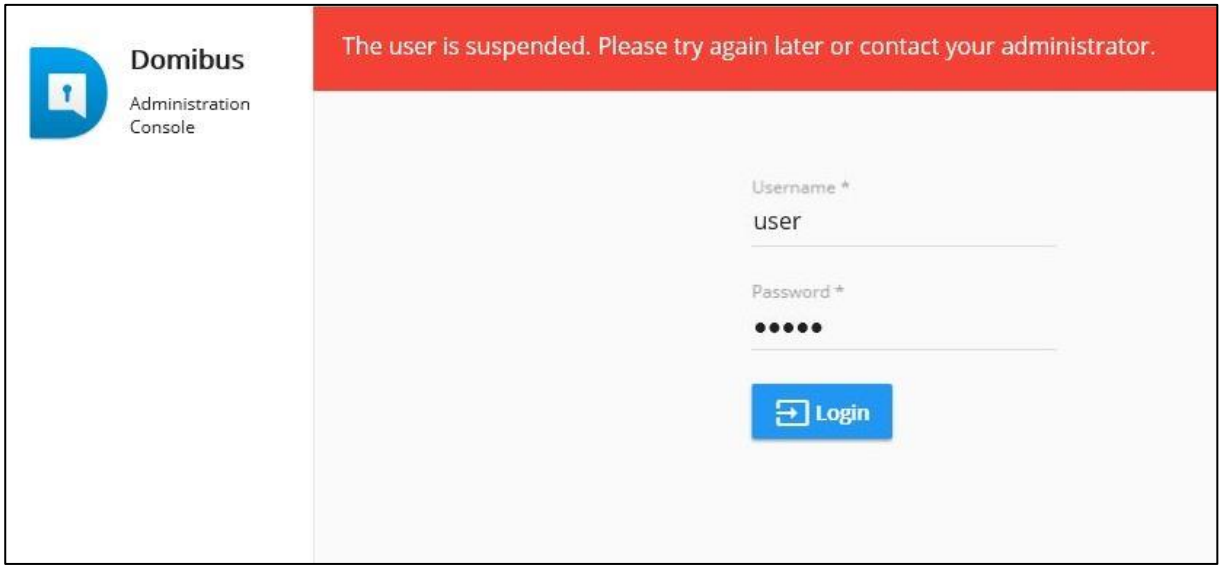


6. When done, either click on **Save,** to save the new password or **Cancel** to leave the password unchanged.



10.10.3. User Account Lockout Policy

A user account lockout policy has been implemented on Domibus Admin Console. By default, if a user tries to log to the Admin Console with a wrong password 5 times in a row, his account will be suspended (locked):

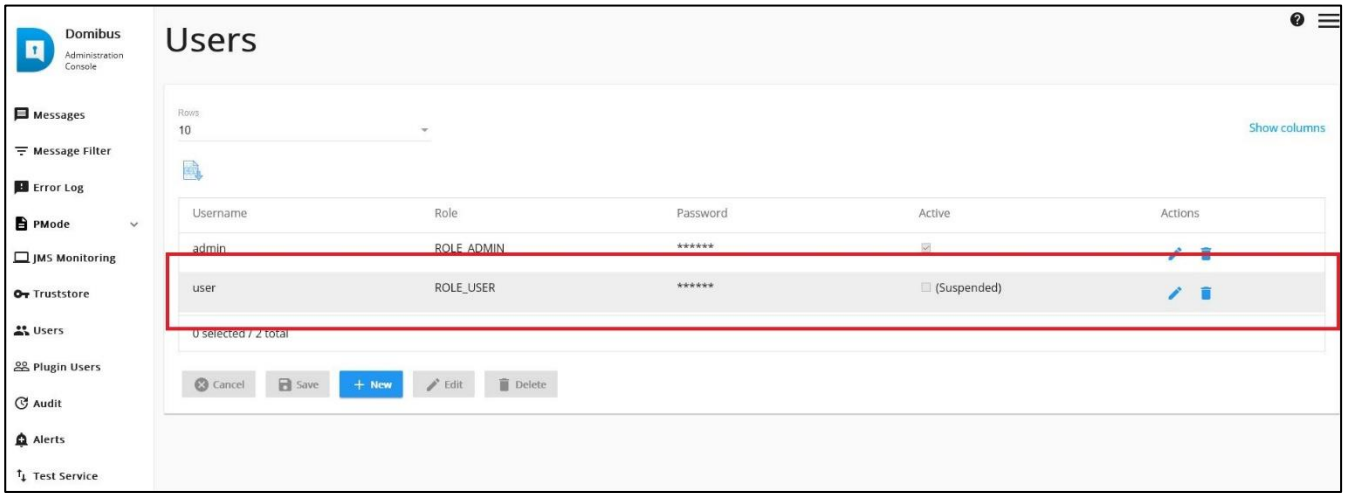


You can define in domibus.properties the number of failed attempts after which a user's account will be locked (see also §5.2- "*Domibus Properties*").

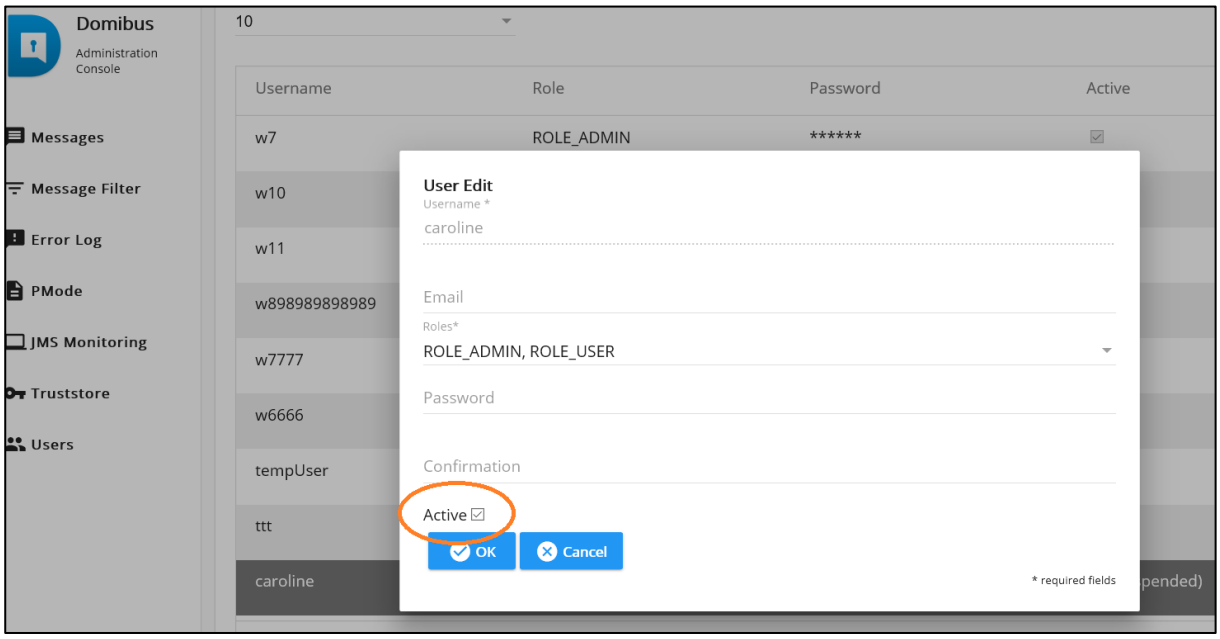
By default, a user remains suspended during one hour before his account is automatically unlocked and the user can try to log again.

If the user wants his account to be unlocked without waiting the default one hour, he can ask his administrator to unlock the account. To unlock the account, the administrator must change the user's status on the Admin Console from "Suspended" to "Active".

Select the suspended user and click on "Edit":



Re-activate the user (unlock it) by checking the "Active" status and confirming with OK:



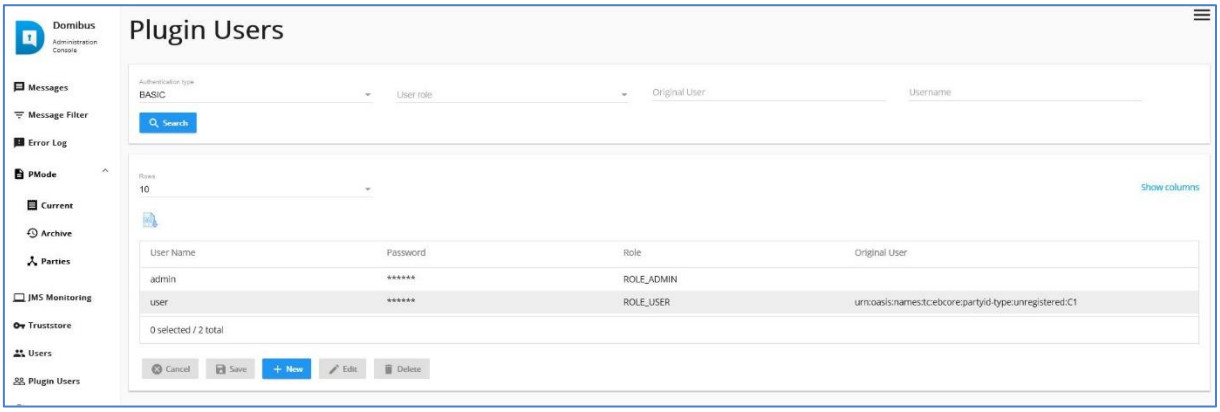
Do not forget to click on **Save** on the next window and then on **Yes** to confirm the change.

10.11. Plugin Users

In Multitenancy mode the plugins security is activated by default, no matter if value configured in domibus.properties for the **domibus.auth.unsecureLoginAllowed** property.

This is needed in order to identify the request performed by the user and associate it to a specific domain. As a result, every request sent to Domibus needs to be authenticated.

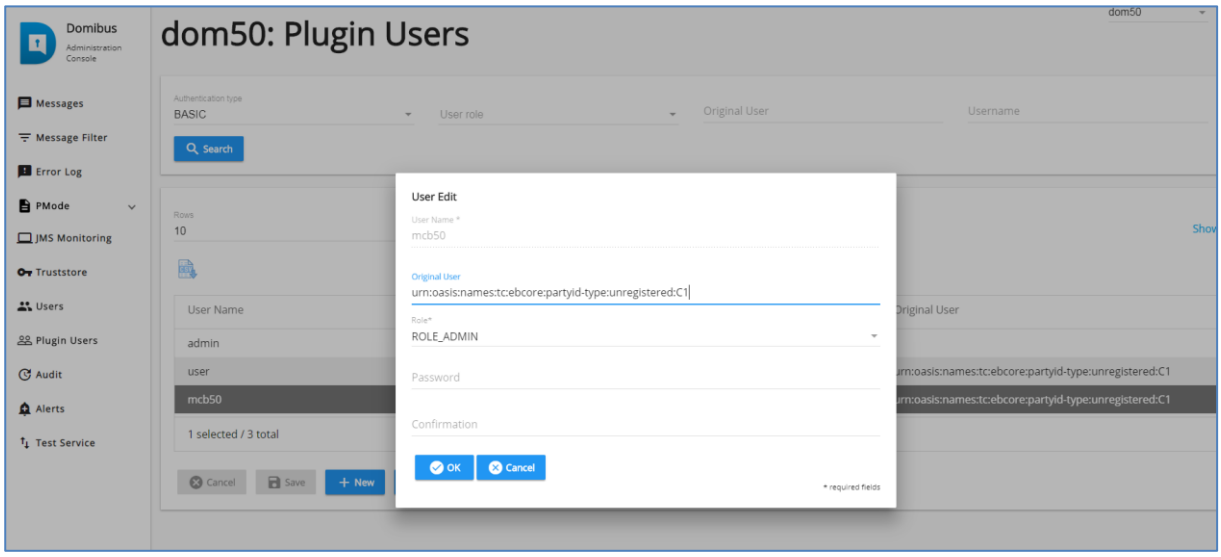
A plugin must use a configured plugin user associated to a specific domain in order to authenticate every request sent to Domibus. The management of the plugin users is implemented in the **Plugin Users** page:



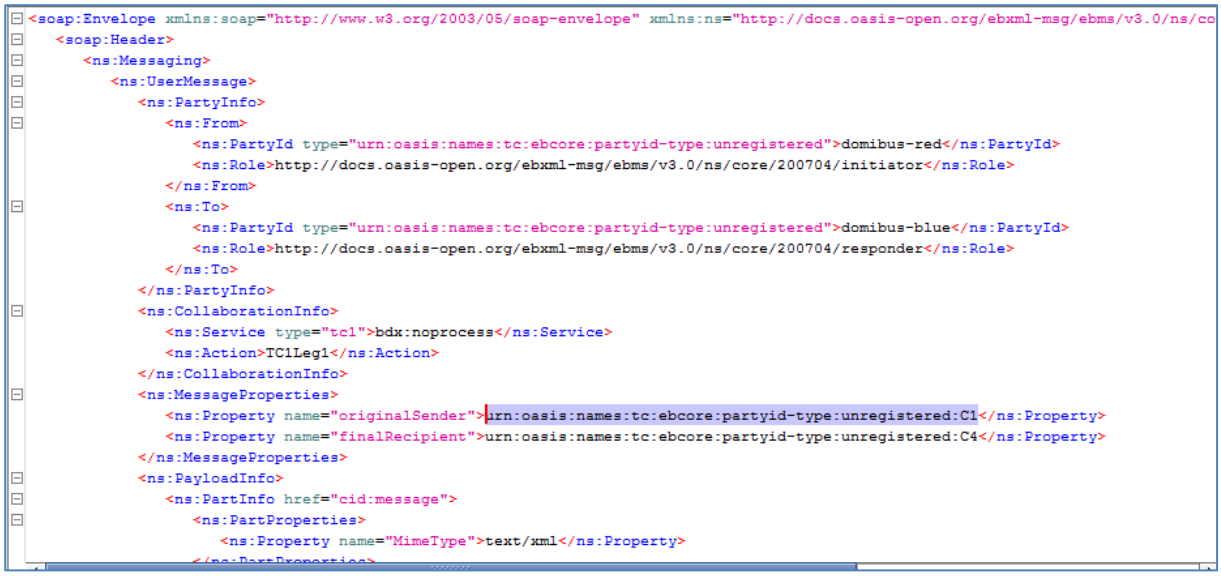
All plugin user passwords have an expiration period, configured in the domibus properties. The new password cannot be one of the last 5 used passwords (the number can be configured). Also, the password must meet complexity rules configured in the properties. If it does not meet them, than an error message is displayed (can also be configured).

The passwords of the default users expire in 1 day. This period can be configured.

The example below shows a **plugin user** that has been added:



Note that the Original user ID can be obtained from the **orginalSender** Property in **the SoapUI** project as shown here:



```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope" xmlns:ns="http://docs.oasis-open.org/ebxml-msg/ebms/v3.0/ns/co
   <soap:Header>
      <ns:Messaging>
         <ns:UserMessage>
            <ns:PartyInfo>
               <ns:From>
                  <ns:PartyId type="urn:oasis:names:tc:ebcore:partyid-type:unregistered">domibus-red</ns:PartyId>
                  <ns:Role>http://docs.oasis-open.org/ebxml-msg/ebms/v3.0/ns/core/200704/initiator</ns:Role>
               </ns:From>
               <ns:To>
                  <ns:PartyId type="urn:oasis:names:tc:ebcore:partyid-type:unregistered">domibus-blue</ns:PartyId>
                  <ns:Role>http://docs.oasis-open.org/ebxml-msg/ebms/v3.0/ns/core/200704/responder</ns:Role>
               </ns:To>
            </ns:PartyInfo>
            <ns:CollaborationInfo>
               <ns:Service type="tc1">bdx:noprocess</ns:Service>
               <ns:Action>TC1Leg1</ns:Action>
            </ns:CollaborationInfo>
            <ns:MessageProperties>
               <ns:Property name="originalSender">urn:oasis:names:tc:ebcore:partyid-type:unregistered:C1</ns:Property>
               <ns:Property name="finalRecipient">urn:oasis:names:tc:ebcore:partyid-type:unregistered:C4</ns:Property>
            </ns:MessageProperties>
            <ns:PayloadInfo>
               <ns:PartInfo href="cid:message">
                  <ns:PartProperties>
                     <ns:Property name="MimeType">text/xml</ns:Property>
```

Do not forget to click on **Save** on the next window and then on **Yes** to confirm the change.

10.12. Audit

Audit support: Domibus keeps track of changes performed in the PMode, Parties, Message Filter and Users pages.

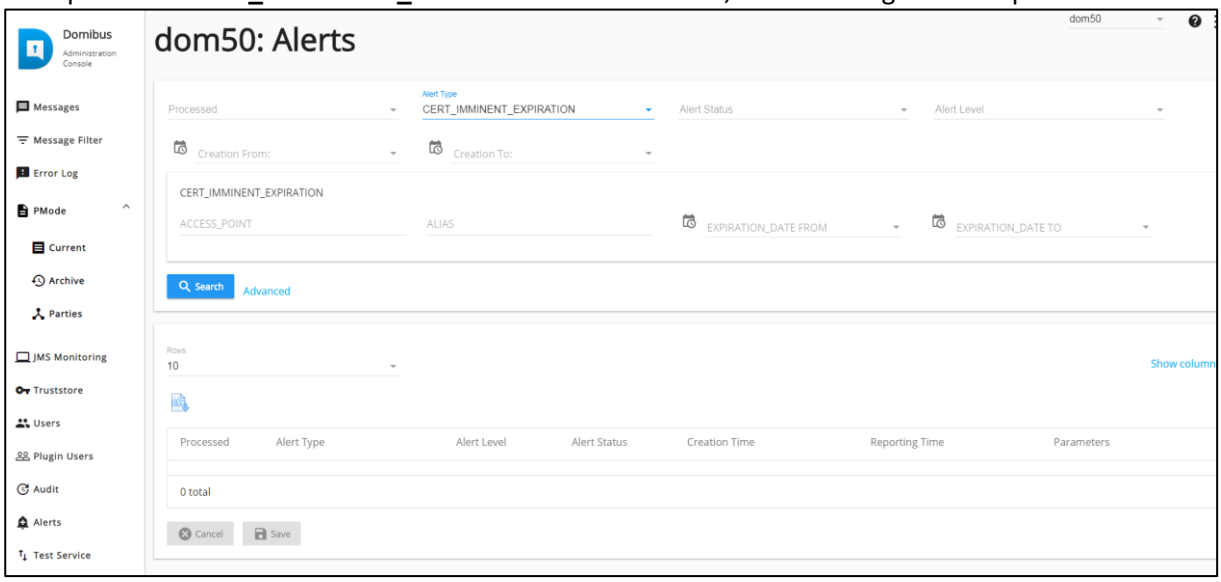
10.13. Alerts

Users can configure the alert feature as described in §18 – *“Alerts”*.
The purpose of the alert feature is to use different available media to notify the Domibus administrator in case of unusual behaviour. Currently alerts can be sent via mail.

The notification emails are sent to the destination recipient or recipients, configured in domibus properties. Also, for the alerts pertaining to the admin console users, the alerts are sent to the saved email address of the user to whom the notification is addressed.

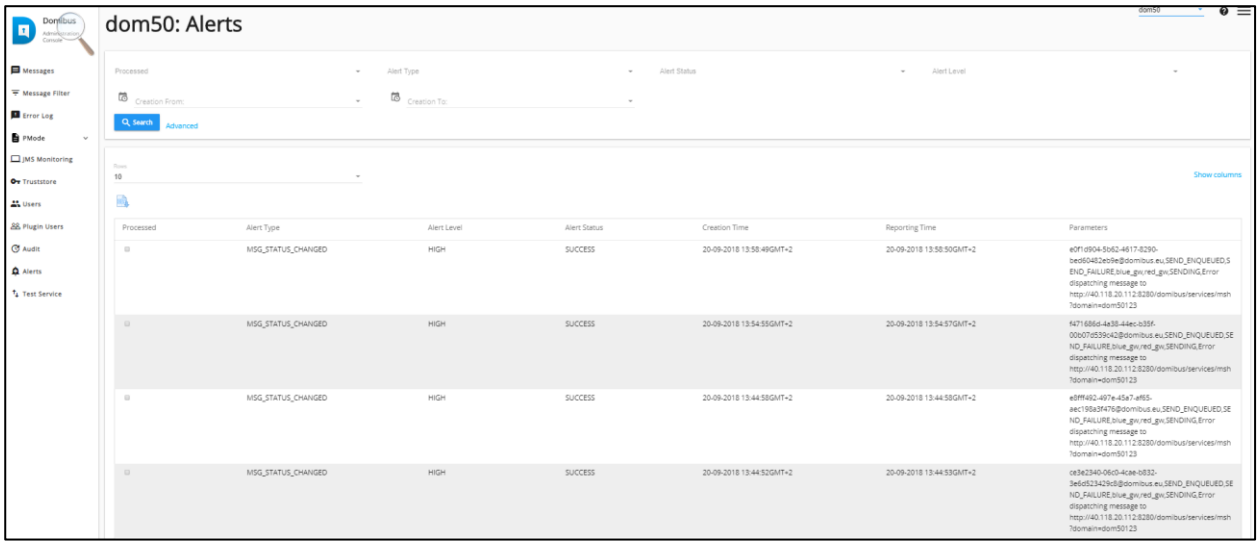
There are three types of alerts that can be configured: Message status change, Authentication issues and Certificate expiration.

Example: If the **CERT_IMMINENT_EXPIRATION** alert is chose, the following screen is presented:



The generated alerts can be checked in the **Alerts** page of the Administration console.

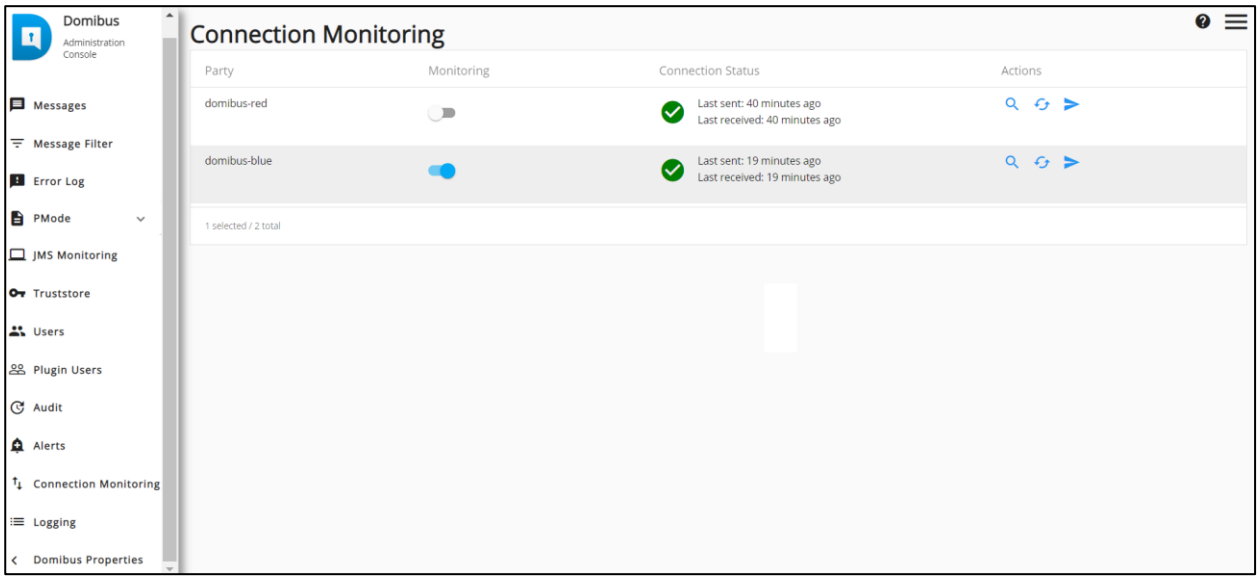
10.13.1. Example: Alerts on SEND_FAILURE



10.14. Connection Monitoring

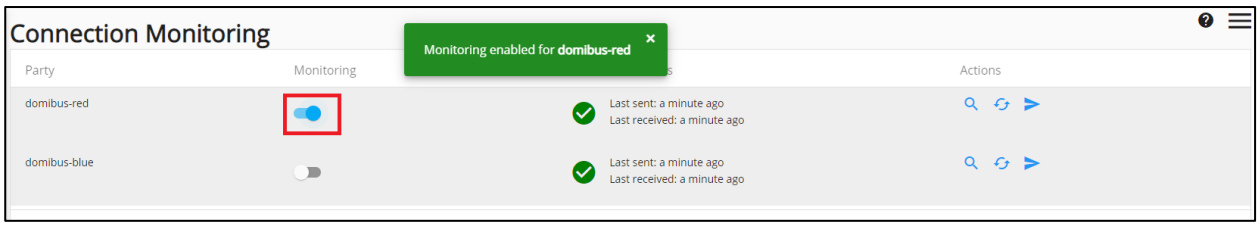
The **Connection Monitoring** section allows communication partners to perform a basic test of the communication configuration (including security at network, transport and message layer, and reliability) in any environment, including the production environment.

All parties that are defined in the Domibus properties are listed on the **Connection Monitoring** page of the Administration console.



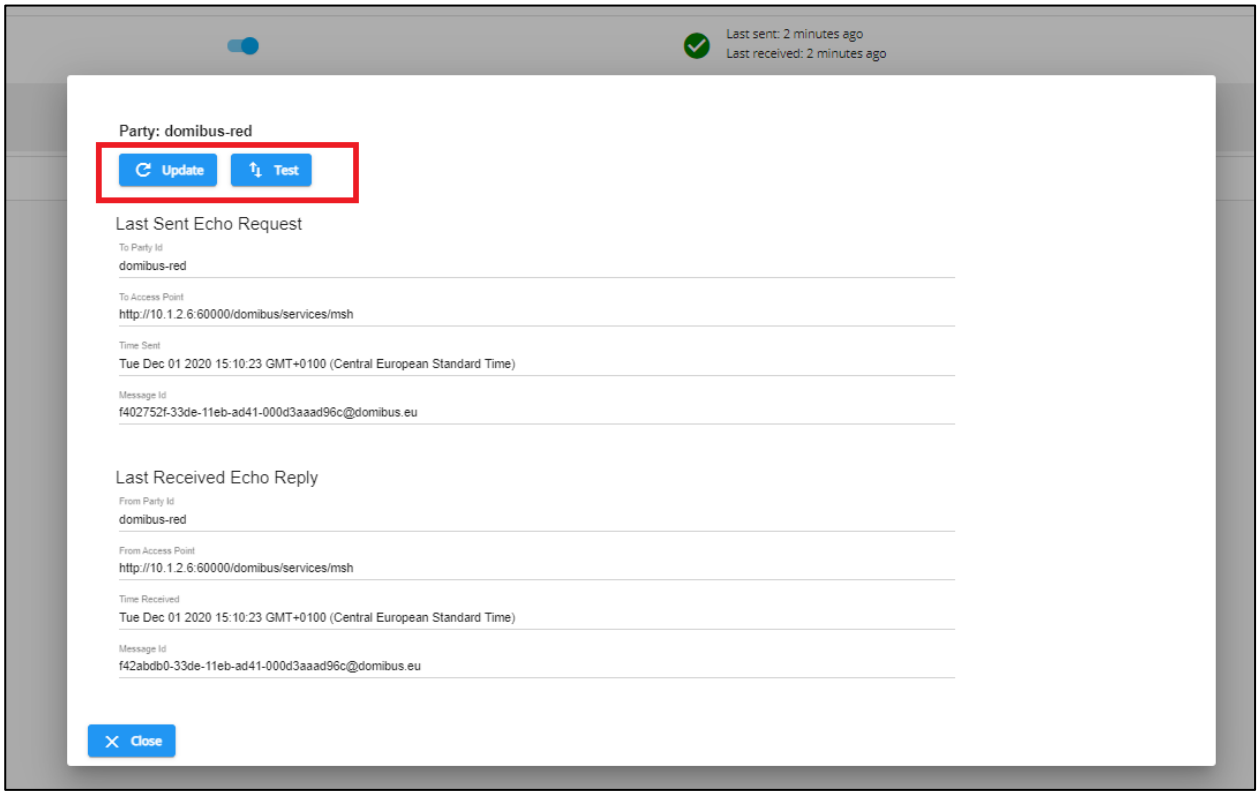
The user can **activate** or **deactivate** the monitoring feature by clicking on the **Monitoring** button of the desired party. Once activated, the monitoring service will send a test message on a frequency defined in the 'domibus.monitoring.connection.cron' property of the domibus.properties file (see § 5.2 Domibus Properties).

The user can also activate or deactivate the monitoring of parties in the 'domibus.monitoring.connection.party.enabled' property of the domibus.properties file (see § 5.2 Domibus Properties).



The user can manually trigger a test by clicking on the Arrow under **Actions.**

To see the details of the connection that was tested, the user can click on the magnifying glass under **Actions**:

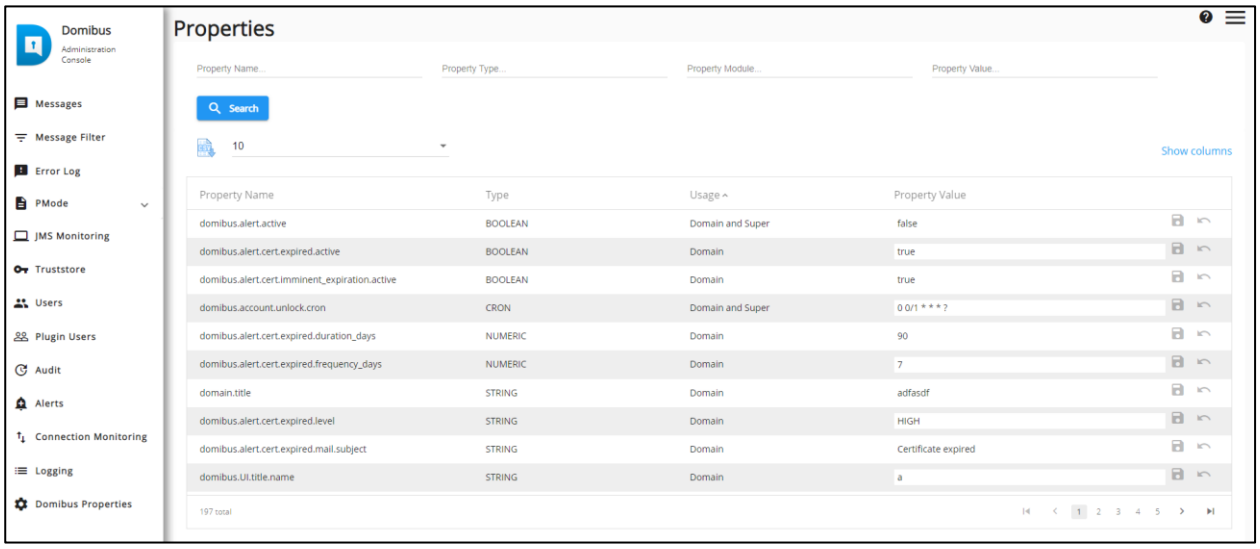


Clicking on **Test** will launch a connection test manually and clicking on **Update** will refresh the connection test information.

10.15. Domibus Properties

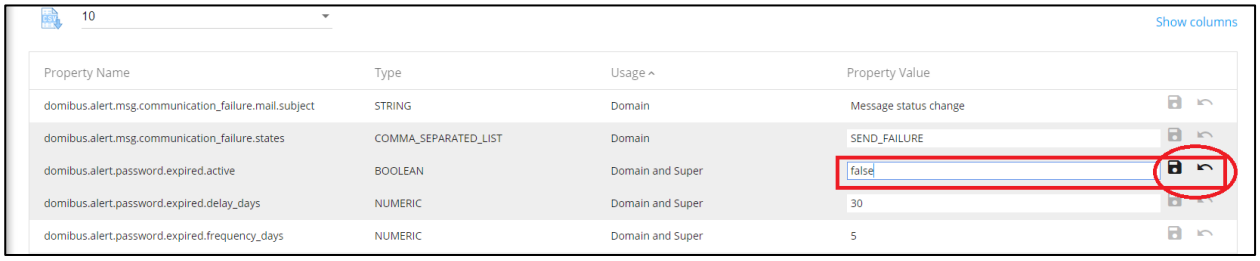
In the **Dominbus properties** section of the Admininstration Console, the list of all Domibus Properties are displayed (details on Domibus properties can be found in §5.2 - Domibus Properties). Some of the displayed properties can be edited, others are read-only.

Remark: When the Domibus server(s) is(are) restarted, the Domibus properties are reverted back and changes made via the Administration Console are lost. This feature is useful when a user wants to test a change in a Domibus property at runtime.



To change a Domibus property, the user clicks in the **Property Value** field and edits it (if the property is read-only, the user will not be able to edit that field). Once done, the user clicks on the **Save** icon to save the changes.

To revert the changes, the user can click on the **Back** arrow next to the Save icon: The back-arrow is only active while editing a certain field, and only restores the property to the value it had at the moment of starting editing, bot not to the initial value in the domibus.properties file.



11. LARGE FILES SUPPORT

Domibus supports transfers between Access Points of files up to 2 GB using Java 8. In order to compute the message signature, Domibus loads the whole message into memory using a byte array. In Java, byte arrays can hold a maximum of 2 GB hence the Domibus limitation of 2 GB.

In order to optimize the sending of such large files, HTTP chunking is activated by default in the connection with the receiver Access Points. As chunked encoding is useful when sending larger amounts of data but decreases the performance on smaller amounts, Domibus uses a threshold to activate the chunking when appropriate only.

The following properties are used to configure chunking: **domibus.dispatcher.allowChunking** and **domibus.dispatcher.chunkingThreshold.** For more information about these properties, please refer to §5.2-*"Domibus Properties"*.

11.1. Split and Join

Support for large files bigger than 2 GB is supported using the Split and Join feature. It provides a mechanism for allowing a Sending MSH to split a large MIME-enveloped SOAP message, referred to as the source message, into a set of smaller MIME-enveloped SOAP messages, referred to as fragment messages, which MUST be joined at the Receiving MSH side. The resulting target message is an identical copy of the source message. The feature also supports compression.

The Split and Join feature is implemented according to the ebMS3 Part 2 "Large Message Splitting and Joining" [EBMS3P2], profiled and adjusted for use with eDelivery AS4.

Split and Join is currently supported in Domibus only in Tomcat in combination with the File System Plugin.

However custom plugins can use the Plugin API to send and receive message using Split and Join. There are certain constraints, like, including long running operations in a JTA transaction which need to be taken into account.

The Split and Join feature is only supported for push mode, not for pull mode.

In order to activate the usage of Split and Join the leg configuration used by Domibus must have a splitting attribute configured as shown below:

```
.....
<splittingConfigurations>
  <splitting name="default"
        fragmentSize="500"
        compression="true"
        joinInterval="1440"/>
</splittingConfigurations>

<legConfigurations>
  <!--
  Please add the attribute "splitting"(pointing to a splitting configuration)
  to a specific leg in case you want to activate splitAndJoin feature
  -->
  <legConfiguration name="pushTestcase1tc1Action"
      service="testService1"
      action="tc1Action"
      splitting="default"
.....
```

Split and Join is used to send large files and therefore in order to handle this type of files Domibus uses the file system to store the result of the intermediary operations needed to split and join the files. Therefore Domibus needs up to 4 times the size of payload in file disk space.

If a payloadProfile attribute is set for the legConfiguration used for Split & Join the maxSize attribute of this profile should have the value increased from maxSize="" to maxSize="2147483647" to maxSize="9223372036854775807" otherwise Domibus is not able to send payloads over 2Gb.

12. Data Archiving

12.1. What's archiving?

Data archiving consists of moving messages that have been processed successfully or unsuccessfully by the access point to an external storage location for long-term retention.
Archived data consists of older data that have been processed at the communication level by the access points that are still significant to the business and may be needed for future reference. They may also be retained for legal constraints.
Data archives are indexed and searchable to allow easy retrieval.
It is not recommended to use Domibus as an archiving solution. Nevertheless, if the data really needs to be stored for long periods, then it is possible to set the Data Retention Policy to allow it to be extracted from the database through the webservices or through an external archiving tool.

12.2. Data Retention Policy

A data retention policy is a procedure established by the business for continuous information storage for operational, legal or compliance reasons.
The data retention policy needs to be defined based on the business needs and constraints.
In Domibus, the data retention policy can be found in the PMode file:

```
<mpcs>
    <mpc name="defaultMpc"
         qualifiedName="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/defaultMPC"
         enabled="true"
         default="true"
         retention_downloaded="0"
         retention_undownloaded="14400"
         retention_sent="14400"
         delete_message_metadata="false"
         max_batch_delete="1000"/>
</mpcs>
```

In the above extract of the sample PMode configuration of Domibus, the data retention policy is set to **14400 minutes** (10 days) if the message is not downloaded. This means that if the message is not downloaded, it will be deleted and then only the metadata containing the information of the receiver and the acknowledgement will be retained.

The data retention policy is set by default to **0 minutes** if the message is downloaded. This means that the message will be instantaneously deleted as soon as it is downloaded. These two parameters, retention_downloaded and retention_undownloaded, can therefore be modified to meet the needs of the business.

The retention_sent parameter is optional and refers to messages in status ACKNOWLEDED and SEND_FAILURE.

The delete_message_metadata parameter is also optional. By default it is set to false. When true, the entire message (including its metadata) is deleted.

When delete_message_metadata parameter is set to ‘true’, messages are deleted in bulk. The batch size of a bulk delete is defined by the optional field max_batch_delete. Defaults to 1000 (the max limit in Oracle).

12.3. Data Extraction

In order to keep the metadata and the payload of the message for a longer period than the one set, in the PMode, it is recommended to extract it to an external storage. As long as the retention worker does not delete it, data can be extracted through the webservices or through an external archiving tool.

For more information, please refer to the Data Model provided in the "Domibus Software Architecture Document" that can be found on the CEF Digital single web portal [REF6].

13. NON REPUDIATION

In order to guarantee non-repudiation, the sending Access Point (C2) stores the full **SignalMessage**, including the **MessageInfo,** the Receipt (that contains the **NonRepudiationInformation** for each part) and the signature of the receipt by the receiver Access Point (C3).

This will guarantee that the receiver Access Point (C3) cannot deny having received a message from the sender Access Point (C2) during the sending process. However; if the initial sender (C1) wants to be sure that the final recipient (C4) cannot deny having received a specific content inside this message, then the sender must be able to show the specific content that was used to produce the receiver Access Point (C3) signature.

Domibus, as a sending Access Point (C2), keeps track of the metadata of the sent messages but does not store the actual message payloads. Therefore; it is recommended that the initial sender (C1) stores the message payloads safely for the time needed to guarantee non-repudiation of the sent messages.

In order to guarantee non-repudiation, the receiving Access Point (C3) stores the full UserMessage and the associated signature of the sender (C2).

This will guarantee that the sender Access Point (C2) cannot deny having sent a message to the receiver during the sending process. However; if the final recipient (C4) wants to be sure that the sender cannot deny having sent a specific content inside this message, then the final recipient (C4) must be able to show the specific content that was used to produce the sender Access Point signature (C2).

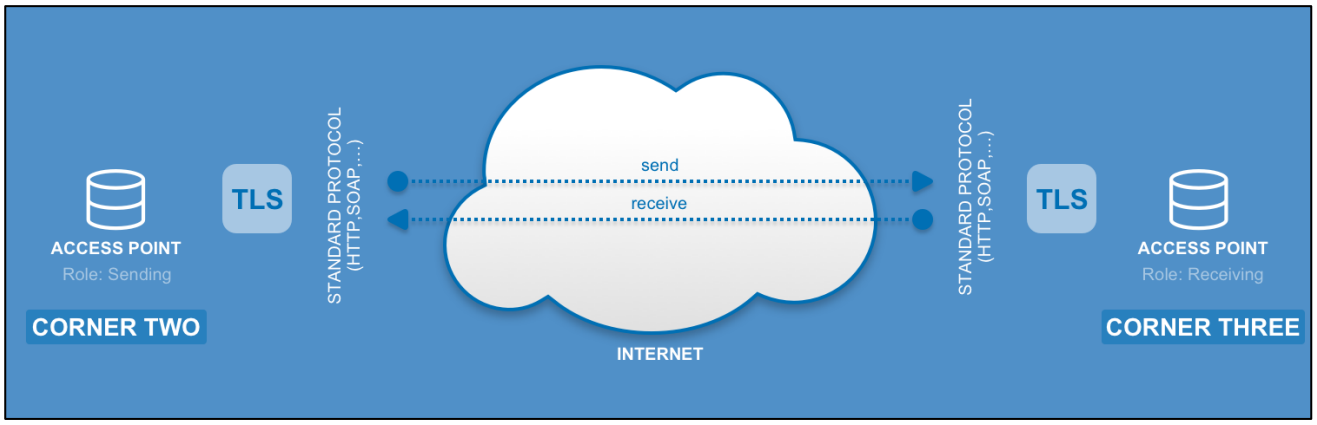
Domibus, as a receiving Access Point (C3), keeps track of the metadata of the received messages and will store the message payloads, only for the (limited) duration configured in the retention period (specified in the PMode). Therefore, it is recommended that the final recipient (C4) either stores the message payloads safely or aligns the retention period on the receiving Access Point (C3) with the time needed to guarantee non-repudiation of the received messages.

14. TLS CONFIGURATION

14.1. TLS Configuration

14.1.1. *Transport Layer Security in Domibus*

In addition to the message level security, Domibus may be configured to exchange messages using TLS (HTTPS). The use of TLS is mandatory according to the eDelivery AS4 profile. However, you can choose to configure it in the Access Point itself or delegate it to another appropriate network component.



14.1.2. *Client Side Configuration*

The implementation of the Domibus MSH is based on the CXF framework. According to CXF documentation, when using an "https" URL, CXF will, by default, use the certs and keystores that are part of the JDK. For many HTTPs applications, that is enough and no configuration is necessary. However, when using custom client certificates or self-signed server certificates or similar, you may need to specifically configure in the keystores and trust managers and such to establish the SSL connection.

Apache provides full description of all possible configuration of the **tlsClientParameters** [see http://cxf.apache.org/docs/client-http-transport-including-ssl-support.html#ClientHTTPTransport(includingSSLsupport)-ConfiguringSSLSupport].

In Domibus, the TLS configuration is read from the file *cef_edelivery_path***/conf/domibus/clientauthentication.xml** and it applies to all the domains when Domibus is configured in multi tenancy mode.

Below example presents two possible configurations, One-Way SSL and Two-Way SSL:

clientauthentication.xml – One-Way SSL

```
<http-conf:tlsClientParameters disableCNCheck="true" secureSocketProtocol="TLSv1.2"
      xmlns:http-conf="http://cxf.apache.org/transports/http/configuration"
      xmlns:security="http://cxf.apache.org/configuration/security">

<security:trustManagers>
      <security:keyStore type="JKS" password="your_trustore_password"
                  file="${domibus.config.location}/keystores/your_trustore_ssl.jks"/>
</security:trustManagers>
```

```
</http-conf:tlsClientParameters>
```

In One-Way SSL, the sender validates the signature of the receiver using the public certificate of the receiver, provided in *your_trustore_ssl*.jks.

clientauthentication.xml – Two-Way SSL

```
<http-conf:tlsClientParameters disableCNCheck="true" secureSocketProtocol="TLSv1.2"
      xmlns:http-conf="http://cxf.apache.org/transports/http/configuration"
      xmlns:security="http://cxf.apache.org/configuration/security">
   <security:trustManagers>
      <security:keyStore type="JKS" password="your_trustore_password"
           file="${domibus.config.location}/keystores/your_trustore_ssl.jks"/>
   </security:trustManagers>
     <security:keyManagers keyPassword="your_keystore_password">
      <security:keyStore type="JKS" password="your_keystore_password"
           file="${domibus.config.location}/keystores/your_keystore_ssl.jks"/>
   </security:keyManagers>
</http-conf:tlsClientParameters>
```

In Two-Way SSL, both the sender and the receiver sign the request and validate the trust of the other party. In addition to the public certificate of the receiver (*your_trustore_ssl*.jks), the private certificate of the sender is also configured (*your_keystore_ssl*.jks).

Remark:

TLSv1.2 is mandatory for eDelivery AS4 Profile.

When self-signed certificates are used, the CN check must be disabled: **disableCNCheck="true"**.

The attribute **disableCNCheck** specifies whether JSSE should omit checking if the host name specified in the URL matches the host name specified in the Common Name (CN) of the server's certificate. The attribute is "false" by default and must not be set to "true" during production use (cf.**[REF7]**).

14.1.3. Server side configuration

14.1.3.1. Tomcat 9.x

In Server.xml, add a new connector with the **SSLEnabled** attribute set to "true":

```
<Connector SSLEnabled="true"
        protocol="org.apache.coyote.http11.Http11NioProtocol"
        port="8443" maxThreads="200"
        scheme="https" secure="true"
        keystoreFile="${domibus.config.location}/keystores/your_keystore_ssl.jks"
keystorePass="your_keystore_password"
        clientAuth="false" sslProtocol="TLS" />
```

The keystore jks location and password must be specified, otherwise the default ones will be taken into account.

TLS version can also be specified.

The above connector has **clientAuth="false"**, which means that only the server has to authenticate itself (One Way SSL). To configure "Two Way SSL", which is optional in the eDelivery *AS4* Profile, set

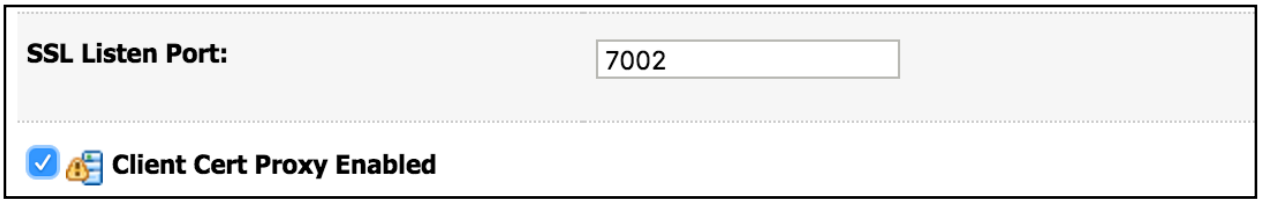
clientAuth="true" in Server.xml and provide the location of the *your_truststore_ssl*.**jks** file so that the server can verify the client:

```
<Connector SSLEnabled="true"
        protocol="org.apache.coyote.http11.Http11NioProtocol"
        port="8443" maxThreads="200"
        scheme="https" secure="true"
        keystoreFile="${domibus.config.location}/keystores/your_keystore_ssl.jks"
keystorePass="your_keystore_password"
        truststoreFile="${domibus.config.location}/keystores/your_truststore_ssl.jks"
truststorePass="your_trustore_password"
        clientAuth="true" sslProtocol="TLS" />
```

14.1.3.2. WebLogic

1. Specify the use of SSL on default port 7002

Go to Servers ➔ select Server Name ➔ Configuration ➔ General then **click** on **Client Cert Proxy Enabled**:



2. Add keystore and truststore:

Go to Servers ➔ select Server Name ➔ Configuration ➔ Keystores and SSL tabs and use **Custom Identity and Custom Trust** then set keystore and truststore jks.

Disable basic authentication at WebLogic level:

By default WebLogic performs its own basic authentication checks before passing the request to Domibus. As we want basic authentication to be performed by Domibus, we need to disable it at the application server level.

To do so, in **DOMAIN_HOME/config/config.xml,** add the following highlighted section:

```
....

<enforce-valid-basic-auth-credentials>false</enforce-valid-basic-auth-credentials>

</security-configuration>
```

14.1.3.3. WildFly 20

The keystore JKS (e.g: bluek.jks) location and password must be specified in the **standalone-full.xml** file as follows.

In this setup only the server has to authenticate itself (One Way SSL).

```
..
<security-realm name="ApplicationRealm">
            <server-identities>
               <ssl>
                  <keystore path="../../conf/domibus/keystores/bluek.jks" relative-
to="jboss.server.config.dir" keystore-password="test123" alias="blue_gw" key-
password="test123"/>
               </ssl>
            </server-identities>
            <authentication>
               <local default-user="$local" allowed-users="*" skip-group-loading="true"/>
               <properties path="application-users.properties" relative-to="jboss.server.config.dir"/>
            </authentication>
            <authorization>
               <properties path="application-roles.properties" relative-to="jboss.server.config.dir"/>
            </authorization>
         </security-realm>
      </security-realms>..
```

- add https-listener to default-server:

```
...
<server name="default-server">
            <http-listener name="default" socket-binding="http" redirect-socket="https" enable-
http2="true"/>
            <https-listener name="https" socket-binding="https" security-realm="ApplicationRealm"
enable-http2="true"/>
            <host name="default-host" alias="localhost">
               <location name="/" handler="welcome-content"/>
               <filter-ref name="server-header"/>
               <filter-ref name="x-powered-by-header"/>
               <http-invoker security-realm="ApplicationRealm"/>
            </host>
         </server>....
```

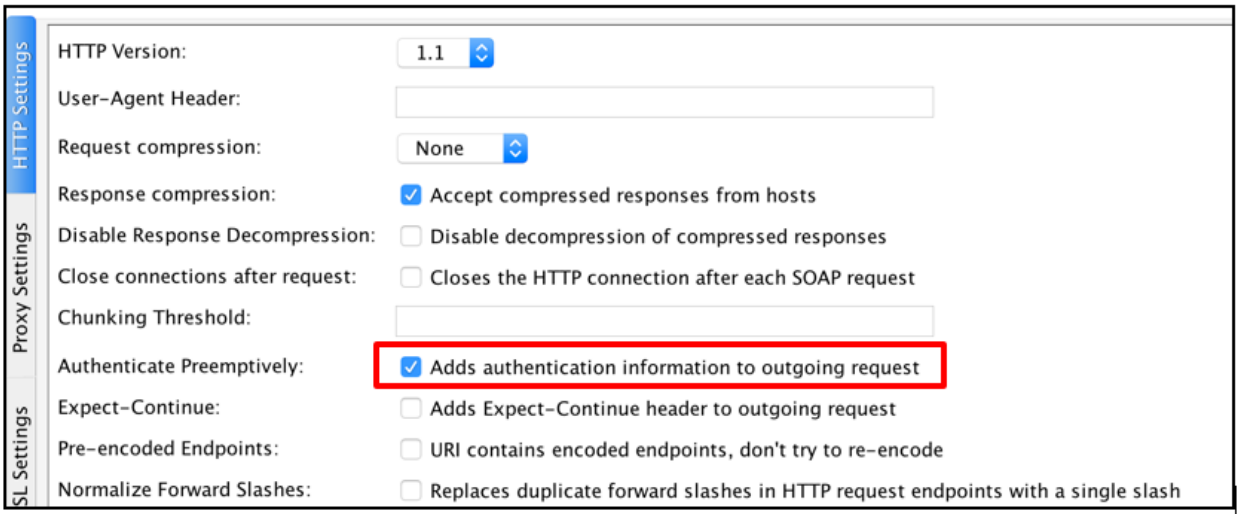
To configure "Two Way SSL", which is optional in the eDelivery *AS4* Profile, add the following details to the standalone-full.xml file and provide the location of the *your_truststore_ssl***.jks** file (e.g: g_truststore.jks) so that the server can verify the client:

```
..
<security-realm name="ApplicationRealm">
            <server-identities>
               <ssl>
                  <keystore path="../../conf/domibus/keystores/bluek.jks" relative-
to="jboss.server.config.dir" keystore-password="test123" alias="blue_gw" key-
password="test123"/>
               </ssl>
            </server-identities>
            <authentication>
```

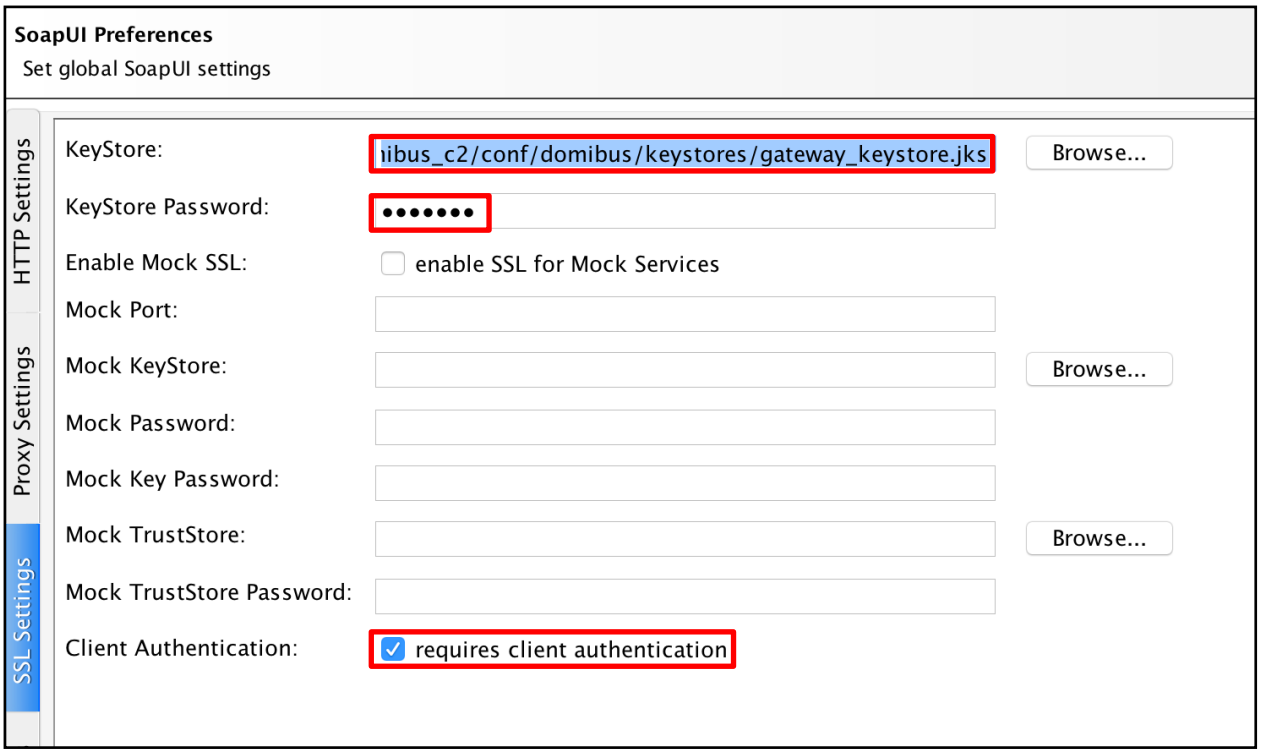
```
            <local default-user="$local" allowed-users="*" skip-group-loading="true"/>
            <properties path="application-users.properties" relative-to="jboss.server.config.dir"/>
<truststore path="../conf/domibus/keystores/g_truststore.jks" relative-to="jboss.server.base.dir"
keystore-password="test123" />
          </authentication>
          <authorization>
            <properties path="application-roles.properties" relative-to="jboss.server.config.dir"/>
          </authorization>
        </security-realm>
      </security-realms>..
```

14.1.3.4. Configure Basic and Certificates authentication in SoapUI

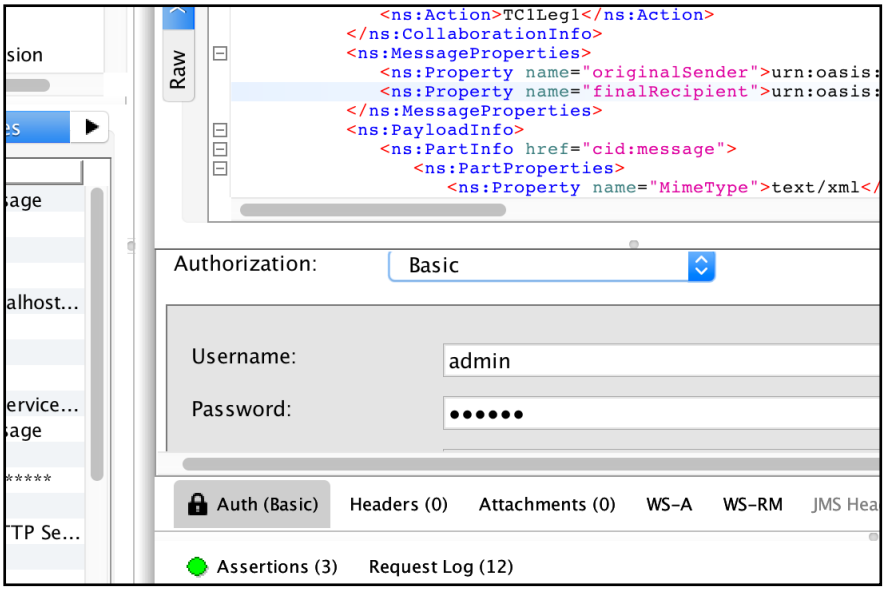
Go to File ➔ Preferences ➔ HTTP Settings and check the option **Adds authentication information to outgoing requests**:



Go to File ➔ Preferences ➔ SSL Settings, add the **KeyStore** and **KeyStore Password** and check the option **requires client authentication**:



To allow Basic Authentication, select the Auth tab, click Add New Authorization and select Basic. Enter user and password (e.g: Username = ***admin***; Password = ***123456***)



14.1.3.5. PMode update

If you enable HTTPS then your PMode Configuration Manager needs to make sure that all other endpoint PModes are modified accordingly.

With the SSL connector configured as above, the MSH endpoint is now: **https://***your_domibus_host***:*8443*/domibus/services/msh**.

After the updates, upload the PModes via the Admin Console:

Example:

```
<party name="party_id_name1"
endpoint=
"https:// party_id_name1_hostname:8443/domibus/services/msh">
```

15. DYNAMIC DISCOVERY OF UNKNOWN PARTICIPANTS

15.1. Overview

In a dynamic discovery setup, the sender and/or the receiver parties and their capabilities are not configured in advance.

The sending Access Point will dynamically retrieve the necessary information for setting up an interoperability process from the Service Metadata Publisher (SMP). The SMP stores the interoperability metadata which is a set of information on the recipient or end entity (its identifier, supported business documents and processes) and AP (metadata which includes technical configuration information on the receiving endpoint, such as the transport protocol and its address) cf.[REF8].

The receiving AP registers its metadata in the SMP and configures the PMode to be able to accept messages from trusted senders that are not previously configured in the PMode. The receiving AP will have to configure one process in its PMode for each SMP entry.

The mapping between the PMode process and the SMP entry is defined for PEPPOL in "§15.3 – *PMode configuration for PEPPOL"* and for OASIS in "§15.8 - *PMode configuration for OASIS*".

Please note that the sender does not have to be registered in the SMP and the receiver merely extracts its identifier from the received message.

The following sections describe how to configure Domibus AP in order to use Dynamic Discovery (§15.3 – *"PMode configuration for PEPPOL"*, §15.3.3 – "*Sender and Receiver PMode"*, §15.8 – "*PMode configuration for OASIS",* §15.9 – "*Policy and certificates for OASIS"*).

15.2. Domibus configuration for PEPPOL

To enable the integration with the SMP/SML components, Domibus requires some changes in the domibus.properties configuration file which include:

1. Adding the following properties to enable the usage of the PEPPOL dynamic discovery client:

   domibus.dynamicdiscovery.client.specification">PEPPOL

2. Setting the dynamic discovery client to use certificates to access the SMP. These certificates are different in TEST and PRODUCTION, therefore we need to specify the Mode used by the dynamic discovery client by setting the following property:

   domibus.dynamicdiscovery.peppolclient.mode">TEST

3. Setting the "**domibus.smlzone**" property.

15.3. PMode configuration for PEPPOL

15.3.1. *Sender PMode*

In a dynamic discovery process, the receiver of the messages is not known beforehand and therefore the **PMode.Responder** parameter SHOULD NOT be set.

The dynamic discovery process must include a leg which maps the configured entry (action, service and service type – see section §15.5 – "*Message format for PEPPOL*") of the Receiver in the SMP.

The security policy to be used in the leg is the policy that embeds the Binary Security Token into the security header (see section §5.1.1 – *"Security Policies"* for more information):

```
security="eDeliveryAS4Policy_BST"
```

Sample Sender PMODE configuration extract:

```
...
<services>
    <service name="testService1"
        value="urn:www.cenbii.eu:profile:bii05:ver2.0"
        type="cenbii-procid-ubl"/>
</services>
<actions>
    <action name="tc1Action"
        value=" busdox-docid-qns:: urn:oasis:names:specification:ubl:schema:xsd:CreditNote-
2::CreditNote##urn:www.cenbii...."/>
</actions>
<securities>
    <security name="eDeliveryAS4Policy_BST"
        policy="eDeliveryAS4Policy_BST.xml"
        signatureMethod="RSA_SHA256"/>
</securities>
<legConfigurations>
    <legConfiguration name="pushTestcase1tc1Action"
    service="testService1"
    action="tc1Action"
    defaultMpc="defaultMpc"
    reliability="AS4Reliability"
    security="eDeliveryAS4Policy_BST"
    receptionAwareness="receptionAwareness"
    propertySet="eDeliveryPropertySet"
    payloadProfile="MessageProfile"
    errorHandling="demoErrorHandling"
    compressPayloads="true"/>
</legConfigurations>
<process name="tc1Process"
    agreement="agreementEmpty"
    mep="oneway"
    inding="push"
    initiatorRole="defaultInitiatorRole"
    responderRole="defaultResponderRole">
```

```
    <initiatorParties>
        <initiatorParty name="senderalias"/>
    </initiatorParties>
    <!-- no responderParties element -->
    <legs>
        <leg name="pushTestcase1tc1Action"/>
    </legs>
</process>
…
```

15.3.2. Receiver PMode

Dynamic discovery configuration of the receiver is similar to the configuration of the sender, except that the roles are swapped: the sender of the messages is not known beforehand. As a consequence the ***PMode.Initiator*** parameter SHOULD NOT be set.

```
…
<process name="tc1Process"
    agreement="agreementEmpty"
    mep="oneway"
    inding="push"
    initiatorRole="defaultInitiatorRole"
    responderRole="defaultResponderRole">
    <responderParties>
        <responderParty name="receiveralias"/>
    </responderParties>
    <!-- no initiatorParties element -->
    <legs>
        <leg name="pushTestcase1tc1Action"/>
    </legs>
</process>
…
```

15.3.3. Sender and Receiver PMode

Dynamic discovery configuration when the Access Point acts as both sender and receiver would look like this:

```
…
<services>
    <service name="testService1"
        value="urn:www.cenbii.eu:profile:bii05:ver2.0"
        type="cenbii-procid-ubl"/>
</services>
<actions>
    <action name="tc1Action"
        value=" busdox-docid-qns:: urn:oasis:names:specification:ubl:schema:xsd:CreditNote-
2::CreditNote##urn:www.cenbii...."/>
</actions>
<securities>
    <security name="eDeliveryAS4Policy_BST"
        policy="eDeliveryAS4Policy_BST.xml"
```

```
        signatureMethod="RSA_SHA256"/>
</securities>
<legConfigurations>
    <legConfiguration name="pushTestcase1tc1Action"
    service="testService1"
    action="tc1Action"
    defaultMpc="defaultMpc"
    reliability="AS4Reliability"
    security="eDeliveryAS4Policy_BST"
    receptionAwareness="receptionAwareness"
    propertySet="eDeliveryPropertySet"
    payloadProfile="MessageProfile"
    errorHandling="demoErrorHandling"
    compressPayloads="true"/>
</legConfigurations>
<process name="tc1Process"
    agreement="agreementEmpty"
    mep="oneway"
    inding="push"
    initiatorRole="defaultInitiatorRole"
    responderRole="defaultResponderRole">
    <initiatorParties>
        <initiatorParty name="senderalias"/>
    </initiatorParties>
    <!-- no responderParties element -->
    <legs>
        <leg name="pushTestcase1tc1Action"/>
    </legs>
</process>
<process name="tc2Process"
    agreement="agreementEmpty"
    mep="oneway"
    inding="push"
    initiatorRole="defaultInitiatorRole"
    responderRole="defaultResponderRole">
    <responderParties>
        <responderParty name="receiveralias"/>
    </responderParties>
    <!-- no initiatorParties element -->
    <legs>
        <leg name="pushTestcase1tc1Action"/>
    </legs>
</process>
```

15.4. Policy and certificates for PEPPOL

The receiver must include the certificate of the trusted authority(ies) in its truststore. It will only accept messages that were signed with certificates issued by the trusted authority(ies) (cf. §27 – "Annex 1 - Usage of certificates in PEPPOL and OASIS" for more information).

15.5. Message format for PEPPOL

When dynamic discovery is used, the "to" field should not be statically configured in the PMode (the "to" field may even be omitted in the message). The lookup is performed by C2 based on the **finalRecipient** message property.

Note: In Peppol, the service@type has a fixed value while the service@value is made of ProcessIdentifier@Scheme::ProcessIdentifier

Example of a message using the **finalRecipient** for dynamic discovery:

```
<ns:UserMessage>
 <ns:PartyInfo>
  <ns:From>
   <ns:PartyId type="urn:fdc:peppol.eu:2017:identifiers:ap">senderalias</ns:PartyId>
   <ns:Role> http://docs.oasis-open.org/ebxml-msg/ebms/v3.0/ns/core/200704/initiator</ns:Role>
  </ns:From>
  <ns:To>
  </ns:To>
 </ns:PartyInfo>
 <ns:CollaborationInfo>
     <ns:Service type="cenbii-procid-ubl">urn:www.cenbii.eu:profile:bii05:ver2.0</ns:Service>
<ns:Action>busdox-docid-qns:: urn:oasis:names:specification:ubl:schema:xsd:CreditNote-
2::CreditNote##urn:www.cenbii.eu:transaction:biitrns014:ver2.0:extended:urn:www.peppol.eu:bis:pep
pol5a:ver2.0::2.1</ns:Action>
 </ns:CollaborationInfo>
  <ns:MessageProperties>
   <ns:Property name="originalSender">urn:oasis:names:tc:ebcore:partyid-
type:unregistered:C1</ns:Property>
    <ns:Property name="finalRecipient" type="iso6523-actorid-
upis">0007:9340033829test1</ns:Property>
  </ns:MessageProperties>
</ns:UserMessage>
```

15.6. SMP entry

The following table describes the mapping between the PMode static configuration and the dynamic SMP records structure:

SMP Endpoint registration record	PMode attributes
ServiceMetadata/ServiceInformation/ProcessIdentifier	PMode[1].BusinessInfo.Service
ServiceMetadata/ServiceInformation/DocumentIdentifier	Pmode[1].BusinessInfo.Action
ServiceInformation/Processlist/Process/ServiceEndpointList/Endpoint/EndpointReference/Address	Pmode[].Protocol.Address

Table 4 - SMP Entry Mapping

The Service Metadata Record also provides the receiving end's certificate. This certificate can be used to encrypt the message to be sent to the receiver. The certificate can also provide the name of the Access Point for this PMode by using the Certificate's CNAME as the PMode identifier (cf.[REF9]).

15.7. Domibus configuration for OASIS

To enable the integration with the SMP/SML components, Domibus requires some changes in the domibus.properties configuration file:

1. Add the following properties to enable the usage of the OASIS dynamic discovery client:

   domibus.dynamicdiscovery.client.specification"> OASIS

   Note: this property is not mandatory as it defaults to the above value.
2. Set the property "**domibus.smlzone**", e.g. "ehealth.acc.edelivery.tech.ec.europa.eu"

15.8. PMode configuration for OASIS

15.8.1. Sender PMode

In a dynamic discovery process, the receiver of the messages is not known beforehand and therefore the **PMode.Responder** parameter SHOULD NOT be set.

The dynamic discovery process must include a leg which maps the configured entry (action, service and service type – cf. 15.10 – "Message format for PEPPOL") of the Receiver in the SMP.

The security policy to be used in the leg is the policy that embeds the Binary Security Token into the security header (see section §5.1.1 – *"Security Policies"* for more information):

```
security="eDeliveryAS4Policy_BST"
```

Sample Sender PMODE configuration extract:

```
...
<services>
    <service name="testService1"
        value="urn:www.cenbii.eu:profile:bii05:ver2.0"
        type="cenbii-procid-ubl"/>
</services>
<actions>
    <action name="tc1Action"
        value="'your-schema-name'::urn:oasis:names:specification:ubl:schema:xsd:CreditNote-
2::CreditNote##urn:www.cenbii...."/>
</actions>
<securities>
    <security name="eDeliveryAS4Policy_BST"
        policy="eDeliveryAS4Policy_BST.xml"
        signatureMethod="RSA_SHA256"/>
</securities>
<legConfigurations>
    <legConfiguration name="pushTestcase1tc1Action"
    service="testService1"
    action="tc1Action"
    defaultMpc="defaultMpc"
    reliability="AS4Reliability"
    security="eDeliveryAS4Policy_BST"
    receptionAwareness="receptionAwareness"
    propertySet="eDeliveryPropertySet"
    payloadProfile="MessageProfile"
    errorHandling="demoErrorHandling"
    compressPayloads="true"/>
</legConfigurations>
<process name="tc1Process"
    agreement="agreementEmpty"
    mep="oneway"
    inding="push"
    initiatorRole="defaultInitiatorRole"
    responderRole="defaultResponderRole">
    <initiatorParties>
        <initiatorParty name="senderalias"/>
    </initiatorParties>
    <!-- no responderParties element -->
    <legs>
        <leg name="pushTestcase1tc1Action"/>
    </legs>
</process>
...
```

Remark:

Schema name should be added to action value. E.g: ***ehealth-actorid-qns::urn:oasis:names:specification:ubl:schema:xsd:CreditNote-2::CreditNote##urn:www.cenbii...***

15.8.2. Receiver PMode

The dynamic discovery configuration of the receiver is similar to the configuration of the sender, except that the roles are swapped: the sender of the messages is not known beforehand. As a consequence, the **PMode.Initiator** parameter SHOULD NOT be set.

```
...
<process name="tc1Process"
    agreement="agreementEmpty"
    mep="oneway"
    inding="push"
    initiatorRole="defaultInitiatorRole"
    responderRole="defaultResponderRole">
    <responderParties>
        <responderParty name="receiveralias"/>
    </responderParties>
    <!-- no initiatorParties element -->
    <legs>
        <leg name="pushTestcase1tc1Action"/>
    </legs>
</process>
...
```

15.9. Policy and certificates for OASIS

The receiver must include the certificate of the trusted authority(ies) in its truststore. It will only accept messages that were signed with certificates issued by the trusted authority(ies).

The sender truststore must include the SMP public certificate. This certificate is used by the AP to validate the identity of the used SMP (cf. §27 –Annex 1 - Usage of certificates in PEPPOL and OASIS for more information).

15.10. Message format for OASIS

When dynamic discovery is used, the "to" field should not be statically configured in the PMode (the "to" field may even be omitted in the message). The lookup is performed by C2 based on the **finalRecipient** message property.

Note 1: For OASIS clients: in the PMode "action" value, the document scheme must be included with the document ID (for PEPPOL client, busdox-docid-qns:: should be pre-appended to the document ID).

Note 2: For OASIS clients: the value of the “service@type” must be set to the “processIdentifier@scheme”.

Example of message using the **finalRecipient** for dynamic discovery:

```
<ns:UserMessage>
 <ns:PartyInfo>
  <ns:From>
   <ns:PartyId type="urn:oasis:names:tc:ebcore:partyid-type:unregistered">senderalias</ns:PartyId>
   <ns:Role>http://docs.oasis-open.org/ebxml-msg/ebms/v3.0/ns/core/200704/initiator</ns:Role>
```

```
   </ns:From>
   <ns:To>
   </ns:To>
  </ns:PartyInfo>
  <ns:CollaborationInfo>
   <ns:Service type="cenbii-procid-ubl">urn:www.cenbii.eu:profile:bii05:ver2.0</ns:Service>

          <ns:Action>'your_schema_name'::urn:oasis:names:specification:ubl:schema:xsd:CreditNote-
2::CreditNote##urn:www.cenbii.eu:transaction:biitrns014:ver2.0:extended:urn:www.peppol.eu:bis:pep
pol5a:ver2.0::2.1</ns:Action>
  </ns:CollaborationInfo>
   <ns:MessageProperties>
    <ns:Property name="originalSender">urn:oasis:names:tc:ebcore:partyid-
type:unregistered:C1</ns:Property>
    <ns:Property name="finalRecipient" type="iso6523-actorid-
upis">0007:9340033829test1</ns:Property>
   </ns:MessageProperties>
</ns:UserMessage>
```

16. MESSAGE PULLING

16.1. Setup

In order to configure message pulling the process section should be configured with **mep** set to "oneway" and binding set to "pull" as shown in the following example:

```
<process name="tc1Process"
    agreement="agreementEmpty"
    mep="oneway"
    binding="pull"
    initiatorRole="defaultInitiatorRole"
    responderRole="defaultResponderRole">
    <initiatorParties>
        <initiatorParty name="initiatoralias"/>
    </initiatorParties >
    <responderParties>
        <responderParty name="receiveralias"/>
    </responderParties>
    <!-- no initiatorParties element -->
    <legs>
        <leg name="pushTestcase1tc1Action"/>
    </legs>
</process>
```

In the case of a pull process, the **initiatorParties** section contains the party that initiate the pull request. The **responderParties** section contains the parties that can be pulled from.

In domibus.properties configuration file adapt the following properties to your needs. Note that domibus.msh.pull.cron and domibus.pull.queue.concurency are mandatory.

```
#Cron expression used for configuring the message puller scheduling.
#domibus.msh.pull.cron=0 0 0/1 * * ?

# Number of threads used to parallelize the pull requests.
#domibus.pull.queue.concurency=1-1

# Number of threads used to parallelize the pull receipts.
#domibus.pull.receipt.queue.concurrency=1-1

#Number or requests executed every cron cycle
#domibus.pull.request.send.per.job.cycle=1

#Time in second for the system to recover its full pull capacity when job schedule is one execution per second.
#If configured to 0, no incremental frequency is executed and the pull pace is executed at its maximum.
#domibus.pull.request.frequency.recovery.time=0

#Number of connection failure before the system decrease the pull pace.
#domibus.pull.request.frequency.error.count=10

#Pull Retry Worker execution interval as a cron expression
#domibus.pull.retry.cron=0/10 * * * * ?
```

If high frequency pulling is used (job configured every second), it is possible to configure the system to lower the pulling frequency in case the counter part access point is unavalailable. Per default if the other access point returns errors 10 times in a row (domibus.pull.request.frequency.error.count) the number of pull requests per job cycle will fall to 1 per mpc. As from the moment, the counter part access point is responding again, Domibus will take the amount of seconds configured within the domibus.pull.request.frequency.recovery.time property to recover the pulling pace configured within the domibus.pull.request.send.per.job.cycle property.

Per default, domibus.pull.request.frequency.recovery.time=0 which means that the throttling mechanism is off.

The following properties are used for dynamic pulling and are recommended to be used only with a custom authorization extension:

```
#Allow dynamic initiator on pull requests - 0 or multiple initiators are allowed in the Pmode process
#domibus.pull.dynamic.initiator=false

#Allow multiple legs configured on the same pull process (with the same security policy)
#domibus.pull.multiple_legs=false

#Force message into READY_TO_PULL when mpc attribute is present
#domibus.pull.force_by_mpc=true

#Mpc initiator separator. This is used when the mpc provides information on the initiator: baseMpc/SEPARATOR/partyName
#domibus.pull.mpc_initiator_separator=PID
```

16.2. Configuration restriction

A correctly configured **one-way pull process** should only contain one party configured in the **initiatorParties** section.

Different **legConfiguration** with the same **defaultMpc** (highlighted in red in the following configuration) should not be configured in the same pull process or across different pull processes.

If those restrictions are not respected, the message will not be exchanged and a warning message will detail the configuration problem.

```
<legConfiguration name="pushTestcase1tc2Action"
                                                    service="testService1"
                                                    action="tc2Action"
                                                    defaultMpc="defaultMpc"
                                                    reliability="AS4Reliability"
                                                    security="eDeliveryAs4Policy"
                                                    receptionAwareness="receptionAwareness"
                                                    propertySet="eDeliveryPropertySet"
                                                    payloadProfile="MessageProfile"
                                                    errorHandling="demoErrorHandling"
                                                    compressPayloads="true"/>
```

17. MULTITENANCY

Domibus supports multiple tenant domains configured in one Domibus instance. This means that each tenant domain has its own configuration (PMode, keystore, truststore and Domibus properties, etc). These multiple configurations allow one Domibus instance to process messages from multiple tenant domains simultaneously.

Domibus uses **Schema per tenant** strategy to implement Multitenancy, meaning that the data associated to a tenant's domain will be saved in a database schema dedicated to the domain.

17.1. Configuration

By default, Multitenancy is not activated. In order to activate Multitenancy, the following property that defines the database general schema needs to be configured in **domibus.properties.**

For WebLogic, this step can only be done after changing the Schema username and password as described in section §17.1.4.

```
domibus.database.general_schema=general_schema
```

Where *general_schema* is the database schema in which the association between users and domains is stored. The *general_schema* is not associated to any domain.

17.1.1. Database general schema

The *general_schema* needs to be initialized using the distributed database script **mysqlinnoDb-x.y.z-multitenancy.ddl** for MySQL or **oracle-x.y.z-multitenancy.ddl** for Oracle**.**

Please find below the steps needed to create the *general_schema* for MySQL and Oracle.

17.1.1.1. MySQL

1. Unzip **domibus-distribution-X.Y.Z-sql-scripts.zip** in *cef_edelivery_path*/**sql-scripts**
2. Open a command prompt and navigate to this directory: *cef_edelivery_path*/**sql-scripts**
3. Execute the following MySQL commands at the command prompt:

```
mysql -h localhost -u root_user --password=root_password -e "drop schema if exists general_schema;create schema general_schema;alter database general_schema charset= utf8mb4 collate= utf8mb4_bin; create user edelivery_user@localhost identified by 'edelivery_password'; grant all on general_schema.* to edelivery_user@localhost;"
```

Only for Mysql 8:

```
mysql -h localhost -u root_user --password=root_password -e "grant xa_recover_admin on *.* to edelivery_user @localhost;"
```

The above script creates a schema (*general_schema*) and a user (*edelivery_user*) that has all the privileges on the *general_schema*.

Remark:

The edelivery_user creation can be skipped if the user already exists.

You need to make sure the user edelivery_user is granted full rights on all schemas used for all the domains.

mysql -h *localhost* -u *root_user* **--*password***=*root_password* general_*schema* **< mysqlinnoDb-x.y.z-multi-tenancy.ddl**

The above command creates the required objects in ***general_schema***.

17.1.1.2. Oracle

1. Unzip **domibus-distribution-X.Y.Z-sql-scripts.zip** in *cef_edelivery_path*/**sql-scripts**

2. Open a command prompt and navigate to the following directory: *cef_edelivery_path*/**sql-scripts**

3. Execute the following commands at the command prompt:

sqlplus sys as sysdba (password should be the one assigned during the Oracle installation)
==========
Once logged in Oracle:

CREATE USER <edelivery_general_user> IDENTIFIED BY <edelivery_general_password>
DEFAULT TABLESPACE <tablespace>
QUOTA UNLIMITED ON <tablespace>;
GRANT CREATE SESSION TO <edelivery_general_user>;
GRANT CREATE TABLE TO <edelivery_general_user>;
GRANT CREATE SEQUENCE TO <edelivery_general_user>;
GRANT EXECUTE ON DBMS_XA TO <edelivery_general_user>;
GRANT SELECT ON PENDING_TRANS$ TO <edelivery_general_user>;
GRANT SELECT ON DBA_2PC_PENDING TO <edelivery_general_user>;
GRANT SELECT ON DBA_PENDING_TRANSACTIONS TO <edelivery_general_user>;

CONNECT **<** edelivery_general_user >
SHOW USER**;** (should return : edelivery_general_user)
@ oracle-x.y.z-multitenancy.ddl

EXIT
==========

Remarks:

1. Replace <edelivery_general_user> and <edelivery_general_password> with the corresponding values.

2. <tablespace> is created and assigned by your DBA; for local/test installations just replace it with users tablespace. The quota could be limited to a certain size.

3. DDL/SQL scripts must be run with the @ sign from the location of the scripts.

17.1.2. Creating new tenant domains

A new tenant domain can be created by adding a domain specific configuration file under the *cef_edelivery_path***/conf/domibus** directory. The domain configuration file name must start with the new tenant domain name (**domain_name**) using the following convention:

domain_name-domibus.properties

The tenant ***domain_name*** value is case-sensitive. It is a 50-character sequence of Unicode letters, digits or underscores characters. It must start with a letter and the subsequent characters may be letters, digits or underscore characters.

Each tenant domain uses its own dedicated schema which is configured in the domain configuration file and has its own keystore, Truststore configured.

The tenant domain database schema must be initialized using the distributed database script **mysqlinnoDb-x.y.z.ddl** or **oracle-x.y.z.ddl**. For more information on how to execute these scripts, go to §4.1-"*Database Configuration"*.

Remarks:

*The **mysqlinnoDb-x.y.z-data.ddl** or **oracle-x.y.z-data.ddl** database scripts **must not be executed in Multitenancy mode**.*

The database user used to connect to the ***general_schema*** schema must have the necessary privileges to access the database schemas for all the **configured tenant domains**. Please follow the steps below for each Database type:

17.1.2.1. MySQL

Execute the following MySQL commands at the command prompt:

If the user ***edelivery_general_user*** is the one having rights on general schema for a particular domain schema just run:

mysql -h *localhost* -u *root_user* **--password=***root_password* **-e "grant all on *domain_schema*.* to** *edelivery_general_user@localhost***;"**

Repeat this command for all the other domains.

17.1.2.2. Oracle

1. Unzip **domibus-distribution-X.Y.Z-sql-scripts.zip** in *cef_edelivery_path***/sql-scripts**
2. Open a command prompt and navigate to this directory: *cef_edelivery_path***/sql-scripts**.
3. Open a command line session, log in and execute the following commands to connect to current domain schema :

```
sqlplus s<domain_user>/<domain_password>@host:port/service
==========================================================================
Once logged in Oracle:
@oracle-4.2-multitenancy-rights.sql
==========================================================================
```

Before running this script, edit it and just replace domain_schema and general_schema values with the desired values. Repeat this command for each domain of the Multitenancy installation.

This script needs to be run after completing a migration of domain Domibus schema (new objects - table, view, sequence - could added in current domain schema).

Once Multitenancy is activated and with no other additional configuration, Domibus will use the tenant domain named **default** for the incoming and outgoing messages. The tenant domain **default** is configured in **default-domibus.properties.**

More information on how Multitenancy is implemented can be found in the **Domibus Software Architecture Document (c.f. [REF11]).**

17.1.3. Tomcat

The Domibus database in Tomcat is configured in the **domibus.properties** file. Running Domibus in **Multitenancy** mode requires that some related database properties are adapted as shown in the example below.

Remark: when using Tomcat with Multitenancy, the user should tweak the number of threads defined in the variable domibus.taskExecutor.threadCount, depending on his configuration (see 5.2 - Domibus Properties).

```
domibus.database.general.schema=general_schema

# optional property used in case the default domain is used
domibus.database.schema=domibus_schema

domibus.datasource.xa.property.url=jdbc:mysql://${domibus.database.serverName}:${domibus.dat
abase.port}/${domibus.database.general.schema}?pinGlobalTxToPhysicalConnection=true
# the user that has access to general_schema
domibus.datasource.xa.property.user=edelivery_user
domibus.datasource.xa.property.password=edelivery_password

domibus.datasource.url=jdbc:mysql://${domibus.database.serverName}:${domibus.database.port}/
${domibus.database.general.schema}?useSSL=false
# the user that has access to general_schema
domibus.datasource.user=edelivery_user
domibus.datasource.password=edelivery_password
```

17.1.3.1. domain_name-domibus.properties configuration

Within the tenant's domain_name-domibus.properties file, the domain_name field must be replaced by the actual name of the tenant domain as shown in the following sample of the **dom50-domibus.properties** example, where **dom50** is the domain name created:

```
# ------------------------------- GUI ------------------------
```

```
#The title shown in the Tab of Admin Console
#dom50.domibus.UI.title.name=windowTitle
#The name of the domain
#dom50.domain.title=domainTitle
#Number of console login attempt before the user is deactivated (default 5)
#dom50.domibus.console.login.maximum.attempt=5
#Time in seconds for a suspended user to be reactivated. (1 hour per default if property is not set, if 0
the user will not be reactivated)
#dom50.domibus.console.login.suspension.time=3600
#Max rows for CSV export
#dom50.domibus.ui.csv.max.rows=10000
# ---------------------------------- Keystore/Truststore ----------------------
#The location of the keystore
dom50.domibus.security.keystore.location=${domibus.config.location}/keystores/dom1_keystore.jks
#The type of the used keystore
dom50.domibus.security.keystore.type=jks
#The password used to load the keystore
dom50.domibus.security.keystore.password=test123
#Private key
#The alias from the keystore of the private key
dom50.domibus.security.key.private.alias=blue_gw
#etc...
```

17.1.4. WebLogic and WildFly

Most of the database configuration for WebLogic and WildFly is done in the application server. The datasources configured in the application server need to be configured with the user and password that has access to the *general_schema* schema and to all the domain schemas. At runtime the database schema will be changed based on the current domain.

17.1.5. WebLogic specific configuration

Activate the Multitenancy by configuring the following property in **domibus.properties**:

```
domibus.database.general_schema=general_schema
```

Disable basic authentication at the WebLogic level by setting the following property in **DOMAIN_HOME/config/config.xml** (End of the <security-configuration> tag):

```
<enforce-valid-basic-auth-credentials>false</enforce-valid-basic-auth-credentials>
```

Example:

```
<security-configuration>
….
<node-manager-password-
encrypted>{AES}hFKbHz7XZ19urplEtWmafYeUm9mr2yXEwyNC9ZpqJHY=</node-manager-password-
encrypted>
<enforce-valid-basic-auth-credentials>false</enforce-valid-basic-auth-credentials>
 </security-configuration>
```

Remark:

WebLogic might not start properly if **domibus.database.general_schema** is set before the **general_schema** username and password have been specified in the WebLogic console. This can be resolved using the following procedure:

1. Comment out (with a #) the domibus.database.general_schema=general_schema line
2. Start the WebLogic server and configure the weblogic server with the username and password of the general_schema in both the XA and NonXA datasources
3. Remove the comment in the domibus.database.general_schema=general_schema
4. Restart the WebLogic server

17.2. PMode

When C2 wants to send messages to a C3 running in Multitenancy mode, the endpoint URL of C3 configured in the C2 PMode can contain the domain name at the end, configured as an HTTP parameter to indicate the domain that will receive the message.

Example:

Let us suppose that C3 exposes the MSH endpoint under the URL: http://localhost:8080/domibus/service/msh. If C2 wants to send messages to C3 to the domain DIGIT, it will call the following MSH C3 endpoint URL:

http://localhost:8080/domibus/service/msh?domain=digit

In case C2 does not specify the domain in the endpoint URL, the message will be sent to the C3 **default** domain.

17.3. Tenant domain Properties

The properties listed in the table below are used to configure a domain. Some of them must be set here with a specific value for the tenant domain while for most it is not mandatory as they can fall back to the corresponding properties defined in domibus.properties. All the properties defined in a tenant domain property file (e.g. ***domain_name*-domibus.properties**) need to be prefixed by the domain name and override the properties from the **domibus.properties** file.

Example:

1. If the domain name is **digit,** the property file **digit-domibus.properties** is used to configure the **digit** domain.

2. Defining a property named **digit.domibus.msh.messageid.suffix** will override the property **domibus.msh.messageid.suffix** defined in **domibus.properties**.

Domain configuration Property	Defaults to domibus.properties if not defined
domain_name.domibus.database.schema	no

*domain_name.*domibus.UI.title.name	yes
*domain_name.domibus.*ui.csv.max.rows	yes
domain_name.domibus.ui.replication.enabled	yes
domain_name.domibus.msh.messageid.suffix	yes
domain_name.domibus.msh.retry.cron	yes
*domain_name.*domibus.dynamicdiscovery.useDynamicDiscovery	yes
domain_name.domibus.smlzone	yes
domain_name.domibus.dynamicdiscovery.client.specification	yes
domain_name.domibus.dynamicdiscovery.peppolclient.mode	yes
domain_name.domibus.dynamicdiscovery.oasisclient.regexCertificateSubjectValidation	yes
domain_name.domibus.dynamicdiscovery.partyid.responder.role	yes
domain_name.domibus.dynamicdiscovery.partyid.type	yes
domain_name.domibus.dispatcher.allowChunking	yes
domain_name.domibus.dispatcher.chunkingThreshold	yes
domain_name.domibus.dispatcher.concurency	yes
domain_name.domibus.dispatcher.connectionTimeout	yes

domain_name.domibus.dispatcher.receiveTimeout	yes
domain_name.domibus.dispatcher.cacheable	yes
domain_name.domibus.msh.pull.cron	yes
domain_name.domibus.pull.queue.concurency	yes
domain_name.domibus.pull.request.send.per.job.cycle	yes
domain_name.domibus.pull.retry.cron	yes
domain_name.domibus.retentionWorker.cronExpression	yes
domain_name.message.retention.downloaded.max.delete	yes
domain_name.message.retention.not_downloaded.max.delete	yes
domain_name.domibus.sendMessage.messageIdPattern	no
domain_name.domibus.attachment.storage.location	no
domain_name.domibus.msh.retry.tolerance	yes
domain_name.domibus.security.keystore.location	no
domain_name.domibus.security.keystore.type	no
domain_name.domibus.security.keystore.password	Accepted characters are: !\"#$%&\'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\\]^_`abcdefghijklmnopqrstuvwxyz{|}~ Please note that \\ \' and \" must be escaped in domibus.properties file
domain_name.domibus.security.key.private.alias	

domain_name.domibus.security.key.private.password	Accepted characters are: !\"#$%&\'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\\]^_`abcdefghijklmnopqrstuvwxyz{|}~ Please note that \\ \' and \" must be escaped in domibus.properties file
domain_name.domibus.security.truststore.location	no
domain_name.domibus.security.truststore.type	no
domain_name.domibus.security.truststore.password	Accepted characters are: !\"#$%&\'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\\]^_`abcdefghijklmnopqrstuvwxyz{|}~ Please note that \\ \' and \" must be escaped in domibus.properties file
domain_name.domibus.receiver.certificate.validation.onsending	yes
domain_name.domibus.sender.certificate.validation.onsending	yes
domain_name.domibus.sender.certificate.validation.onreceiving	yes
domain_name.domibus.sender.trust.validation.onreceiving	yes
domain_name.domibus.sender.trust.validation.truststore_alias	yes
domain_name.domibus.sender.trust.validation.expression	yes
domain_name.domibus.sender.certificate.subject.check	yes
domain_name.domibus.alert.retry.cron	yes
domain_name.domibus.alert.cleaner.cron	yes
domain_name .domibus.alert.sender.email	
domain_name .domibus.alert.receiver.email	
domain_name.domibus.alert.cleaner.cron	0 0 0/1 * * ?

domain_name.domibus.alert.cleaner.alert.lifetime	20
domain_name.domibus.alert.active	TRUE
domain_name.domibus.alert.mail.sending.active	FALSE
domain_name.domibus.alert.mail.smtp.timeout	5000
domain_name.domibus.alert.queue.concurrency	1
domain_name.domibus.alert.retry.cron	0 0/1 * * * ?
domain_name.domibus.alert.retry.time	1
domain_name.domibus.alert.retry.max_attempts	2
domain_name.domibus.alert.msg.communication_failure.active	TRUE
domain_name.domibus.alert.msg.communication_failure.states	SEND_FAILURE
domain_name.domibus.alert.msg.communication_failure.level	HIGH
domain_name.domibus.alert.msg.communication_failure.mail.subject	Message status change
domain_name.domibus.alert.user.login_failure.active	TRUE
domain_name.domibus.alert.user.login_failure.level	LOW
domain_name.domibus.alert.user.login_failure.mail.subject	Login failure
domain_name.domibus.alert.user.account_disabled.active	TRUE
domain_name.domibus.alert.user.account_disabled.level	HIGH
domain_name.domibus.alert.user.account_disabled.moment	WHEN_BLOCKED

domain_name.domibus.alert.user.account_disabled.subject	Account disabled
domain_name.domibus.alert.cert.imminent_expiration.active	TRUE
domain_name.domibus.alert.cert.imminent_expiration.frequency_days	14
domain_name.domibus.alert.cert.imminent_expiration.level	HIGH
domain_name.domibus.alert.cert.imminent_expiration.mail.subject	Certificate imminent expiration
domain_name.domibus.alert.cert.expired.active	TRUE
domain_name.domibus.alert.cert.expired.frequency_days	7
domain_name.domibus.alert.cert.expired.duration_days	90
domain_name.domibus.alert.cert.expired.level	HIGH
domain_name.domibus.alert.cert.expired.mail.subject	Certificate expired
domain_name.domibus.dynamicdiscovery.transportprofileas4	yes
*domain_name.*domibus.dispatcher.connection.keepAlive	yes
*domain_name.*domibus.dispatcher.splitAndJoin.payloads.schedule.threshold	1000
*domain_name.*domibus.splitAndJoin.receive.expiration.cron	0 0/5 * * * ?
*domain_name.*domibus.pull.dynamic.initiator	yes
domain_name.domibus.pull.multiple_legs	yes
domain_name.domibus.pull.force_by_mpc	yes
domain_name.domibus.pull.mpc_initiator_separator	yes

Remark:

*A tenant domain property is mandatory to be defined if it does not default to **domain.properties.***

17.4. Super Properties

The properties that are sepecif to super users (ROLE_AP_ADMIN) are defined in a separate file called **super-domibus.properties,** a file that can be found along with the others. These properties are related to password policy and alert configuration for super users.

17.5. Logging

Domibus generates logs in 3 log files when running in non Multitenancy mode (**domibus.log, domibus-business.log and domibus-security.log**), that are configured in the **logback.xml** file. More information about what is being logged into those files can be found in §10.5 – "*Application Logging*".

In Multitenancy mode, the following should be expected:

- main files - **domibus.log**, **business.log** and **security.log** will contain only general logging information and not domain specific;

- 'per domain' files, e.g. domain1-domibus.log, domain1-business.log and domain1-security.log will contain logging entries only for the specific domain 'domain1';

- it is mandatory to add a **domain logback.xml** for each domain including the 'default' one. Attention, if such file does not exist, the logging information to be lost for that domain.

When running in Multitenancy mode, the Domibus log configuration file **logback.xml** has to be modified as followed:

a. uncomment all the sections marked like this one:

```
<!-- multitenancy: uncomment this
<filter class="eu.domibus.logging.DomibusLoggerDomainFilter">
  <domain></domain>
  <OnMismatch>DENY</OnMismatch>
</filter>
-->
```

b. edit the file in order to include the log configuration for each domain. This is necessary to segregate the log statements per tenant domain, each tenant domain having its own set of the 3 logs files mentioned above:

```
<!-- multitenancy: start include domains config files here -->
<!--<include optional="true" file="${catalina.home}/conf/domibus/domain_name-logback.xml"/>-
->
<!-- multitenancy: end include domains config files here -->
```

c. add a domain config file for the 'default' domain.

In order to configure the logs per domain please follow the steps:

1. Customize the **domain_name-logback.xml** file distributed in each server configuration archive.

a. Rename the **domain_name-logback.xml** file according to the domain name. E.g: if the domain name is **domain1**, the file should be renamed to **domain1-logback.xml.**

b. Adapt the value of the **domainName** variable defined in the domain logback configuration file. The value should correspond to the name of the configured domain.

```
<included>
  <property name="domainName" value="domain1" scope="local" />
```

2. Include the domain configuration file into the main **logback.xml** file:

```
<configuration>
  <!-- start include domains config files here -->
  <include optional="true" file="${catalina.home}/conf/domibus/domain1-logback.xml"/>
```

In order to add some particular logging information per domain, the user must add in the **logback.xml** file the following section (example for 'domain1' domain):

```
    <logger name="eu.domibus" level="DEBUG" additivity="false">
     <appender-ref ref="domain1-file"/>
     <appender-ref ref="stdout"/>
    </logger>
```

In the example above, 'eu.domibus' is the name of the package for setting DEBUG level, 'domain1-file' is the appender of 'domain1'.

The line with 'stdout' is optional and it will print the DEBUG info on the server console.

17.6. Users

In Multitenancy mode there is a new user named **super** with role ROLE_AP_ADMIN which has the privileges to access all the available domains. The default password for the **super** user is **123456**.

The first time a new tenant domain is created, the **super** user creates a new user in the **Domibus Administration Console** with role ROLE_ADMIN associated to the newly created domain. All normal users (ROLE_ADMIN, ROLE_USER) can be associated to only and only one domain. More details how to create users can be found in the help page of the **Users** page.

Afterwards the **super** user sends the credentials to the domain admin user. The domain admin logs into the **Domibus Administration Console** using the received credentials and has to change its password in the **Users** page. The domain admin has only access to his domain and he has the privileges to create only new users that are associated to his domain.

Remark:

Please note that user names need to be unique amongst existing tenant domains.

17.7. Plugins

When running in Multitenancy mode the plugins security is activated by default, no matter if the property **domibus.auth.unsecureLoginAllowed** in the domibus.properties files is set to true or not. This is needed in order to identify the request performed by the user and associate it to a specific tenant domain. As a result, every request sent to Domibus needs to be authenticated.

Remark:

Please note that the **Default JMS Plugin** *requires the creation of additional JMS queues. More information on which queues need to be created can be found in the* JMS Plugin Interface Control Document (ICD) *(see* [REF12]).

More information on this topic can be found in the Domibus Software Architecture Document (SAD) (c.f. [REF11]).

17.7.1. Plugin Users

In Multitenancy mode, a plugin must use a configured plugin user associated to a specific tenant domain in order to authenticate every request sent to Domibus. The management of the plugin users is implemented in the **Plugin Users** page of **Domibus Administration Console**. More details on how to manage the plugin users can be found in the help page of the **Plugin Users** page (see also §10 – "*Administration Tools"*).

The **Default JMS Plugin** and the **Default FS Plugin** implement only authentication mechanism. The two previously mentioned plugins must use any configured plugin user to send requests to Domibus, no matter the role: ROLE_ADMIN or ROLE_USER. The request will be sent to the domain associated to the plugin user used for authentication.

The **Default WS Plugin** implements authentication and authorization mechanism.

For authentication the **Default WS Plugin** must use a configured plugin user to send requests to Domibus, the configuration is the same as for the **Default JMS Plugin** and the **Default FS Plugin**.

More details on how the authorization is implemented in the **Default WS Plugin** can be found in §6.1.2 *"WS Plugin"* and in the plugin cookbook document (cf.[REF6]).

Remark:

Please note that user names need to be unique amongst existing tenant domains.

17.8. Switching from non Multitenancy to Multitenancy mode

When switching an existing installation of Domibus to Multitenancy mode, the instructions described in §17.1 – *"Configuration"* have to be executed.

After the switch to Multitenancy mode is finished, the schema that was previously used in non Multitenancy mode will be used by a specific tenant domain. Additionally the **super** user must select the migrated tenant domain in Domibus Administration console and re-create the existing users present in the **Users** and **Plugin Users**. This step is required because in Multitenancy mode there is an automatic synchronization of domain users into the general schema. More info about the synchronization of tenant domain users can be found in the Domibus Software Architecture Document (SAD) (c.f. [REF11]).

18. ALERTS

18.1. Description

The purpose of the alert feature is to use different available media to notify the Domibus administrator in case of unusual behaviour. Those notifications are presented to the Domibus administrator under the form of configurable alerts. The alerts can be browsed in the **Domibus Admin Console** in the Alerts section and can be sent by **email**.

Currently, only email notification channel is available, but other communication media will be added in future releases.

Three topics are available for monitoring:

- Message status change
- Authentication issues
- Certificate expiration.

18.2. Main configuration

The properties, described below, can be configured in the domibus.properties configuration file.

By default, alerts are not activated. A single property can activate or deactivate the entire alert concept. In order to activate it, the following property should be set to true.

```
# ---------------------------------- Alert management ----------------------------------
#enable/disable the entire alert module. Pay attention to the fact that if the module is activated, all properties
#under the mandatory section should be configured.
domibus.alert.active=true
```

Once the alerts are activated, the SMTP server needs also to be configured. In that case the following properties are mandatory:

```
# ----------------------------------Mandatory configuration start (if domibus.alert.active=true) ----------

#Smtp sever url for sending alert
#domibus.alert.sender.smtp.url=

#Smtp sever port
#domibus.alert.sender.smtp.port=

#Smtp sever user
#domibus.alert.sender.smtp.user=

#Smtp sever user password
#domibus.alert.sender.smtp.password=
```

```
#Alert sender email
#domibus.alert.sender.email=

#Alert email receiver.
#domibus.alert.receiver.email=
```

The first four properties are used to configure respectively the URL, the port, the user and the password to authenticate to the SMTP server.

The last two properties are needed to respectively set the emails of the alert sender and the alert receiver.

The following properties are already preconfigured with default values and therefore are not mandatory to be configured:

```
#The following properties can stay commented if no modifications to the default values are needed.

#Cron configuration for cleaning alerts.
#domibus.alert.cleaner.cron=0 0 0/1 * * ?

# Alerts lifetime in days of before cleaning.
#domibus.alert.cleaner.alert.lifetime=20

#Concurrency to process the alerts.
#domibus.alert.queue.concurrency=1

#Frequency of failed alerts retry.
#domibus.alert.retry.cron=0 0/1 * * * ?

#Elapsed time in minute between alert retry.
#domibus.alert.retry.time=1

#Number of retry for failed alerts.
#domibus.alert.retry.max_attempts=2
```

By default, Domibus will check every hour for expired alerts. The default lifetime for an alert is 20 days after which the alert is deleted from the system.

The concurrency property allows processing multiple alerts in parallel. Alerts can be configured with a retry in case of dispatch failure. By default Domibus will wait one minute between two alert dispatch attempts, and it will retry twice.

Multitenancy

In Multitenancy mode, the four SMTP properties should be configured in the main domibus.properties. Indeed only one SMTP server can be configured for all the tenants.

On the other hand, the sender and receiver properties must be configured in each domain configuration file.

Multitenancy also introduces the existence of a super user. Authentication alerts can be configured for it. Some specific global properties have been created for the super user. The following properties are documented with their default value. They can be overwritten in domibus.properties file:

```
# ---------------------------------- Super user Alert management ----------------------------------

#Cron configuration for cleaning alerts.
#domibus.alert.super.cleaner.cron=0 0 0/1 * * ?

#Lifetime in days of alerts before cleaning.
#domibus.alert.super.cleaner.alert.lifetime=20

#Enable/disable the entire alert module.
#domibus.alert.super.active=true

#Allow to disable alert mail sending.
#domibus.alert.super.mail.sending.active=false

#Frequency of failed alerts retry.
#domibus.alert.super.retry.cron=0 0/1 * * * ?

#Elapsed time in minutes between alert retry.
#domibus.alert.super.retry.time=1

#Maximum number of attempts for failed alerts
#domibus.alert.super.retry.max_attempts=2
```

18.3. Message status change alerts

Domibus is able to track Message status changes. All status changes can be tracked but it is advised not to track the status of frequently changing statuses (e.g.: From SEND_ENQUEUED to ACKNOWLEDGE) to avoid being spammed.

Each alert topic (Message status change, authentication and certificate expiration) can be activated or deactivated independently from each other. Attention, in order for the alert feature to work, the main alert module must always be activated (see § 18.2-*"Main configuration"*).

By default, message status change alerts are not activated. In order to activate them, the following property should be set to true:

```
# ---------------------------------- Alert management: messaging module -----------------
#enable/disable the messaging alert module.
domibus.alert.msg.communication_failure.active=true
```

The following properties are already preconfigured with default values and therefore are not mandatory to be configured:

```
#Message status change that should be notified by the messaging alert module. Comma separated.
#domibus.alert.msg.communication_failure.states=SEND_FAILURE

#Alert levels corresponding to message status defined in previous
property(domibus.alert.msg.communication_failure.states) . Should be (HIGH, MEDIUM or LOW)
#domibus.alert.msg.communication_failure.level=HIGH

#Messaging alert module mail subject.
#domibus.alert.msg.communication_failure.mail.subject=Message status change
```

Per default, Domibus will only track message status change to SEND_FAILURE. The level of the alert that will be triggered is HIGH. The last property allows configuring the subject of the mail sent.

If there is a need to track another message status change, a comma separated list can be configured:

```
Eg: domibus.alert.msg.communication_failure.states=SEND_FAILURE,ACKNOWLEDGED
```

If there is a need to set an alert level per status change it can also be done with a comma separated list:

```
domibus.alert.msg.communication_failure.level=HIGH,LOW
```

In the example above, an alert for a message being set in send_failure status will have a high level and an alert for a message being set to acknowledged status will have a low level.

18.4. Authentication Alerts

Domibus is able to track admin console login failure and user account disabling. The login failure alert will occur for each unsuccessful attempt. Note that if the username encoded is unknown to the system, no alert will be created. Only known user with invalid password will be tracked. The account disabled alert will occur either because the user did too many invalid login attempts or because an administrator disabled the account.

By default, login failure alerts are not activated. In order to activate them, the following property should be set to true:

```
# ---------------------------------- Alert management: Authentication module -----------------

#Enable/disable the login failure alert of the authentication module.
domibus.alert.user.login_failure.active=true
```

The following properties are already preconfigured with default values and therefore are not mandatory to configure:

```
#Alert level for login failure.
#domibus.alert.user.login_failure.level=LOW

#Login failure mail subject.
#domibus.alert.user.login_failure.mail.subject=Login failure
```

Per default, the alert level for a login failure is low. The last property allows configuring the subject of the mail sent.

By default, account disabled alerts are not activated. In order to activate them, the following property should be set to true:

```
#Enable/disable the account disable alert of the authentication module.
domibus.alert.user.account_disabled.active=true
```

The following properties are already preconfigured with default values and therefore are not mandatory to configure:

```
#Alert level for account disabled.
#domibus.alert.user.account_disabled.level=HIGH

#When should the account disabled alert be triggered.
# 2 possible values:
# AT_LOGON: An alert will be triggered each time a user tries to login to a disabled account.
# WHEN_BLOCKED: An alert will be triggered once when the account got disabled.
#domibus.alert.user.account_disabled.moment=WHEN_BLOCKED

#Account disabled mail subject.
#domibus.alert.user.account_disabled.subject=Account disabled
```

Per default, the alert level for an account disabled is high. The next property specifies when an account_disabled alert should be triggered. It can be only at disabling time or at every new login attempt after the account has been disabled. The default value WHEN_BLOCKED will therefore create only one alert when the account is disabled.

The last property allows configuring the subject of the mail sent.

Multitenancy

The following super user authentication alerts properties are documented with their default value. They can be overwritten in the domibus.properties file:

```
# ---------------------------------- Super user alert management:Authentication module -----------------

#Enable/disable the login failure alert of the authentication module.
#domibus.alert.super.user.login_failure.active=true

#Alert level for login failure.
#domibus.alert.super.user.login_failure.level=LOW

#Login failure mail subject.
#domibus.alert.super.user.login_failure.mail.subject=Super user login failure

#Enable/disable the account disable alert of the authentication module.
#domibus.alert.super.user.account_disabled.active=true

#Alert level for account disabled.
#domibus.alert.super.user.account_disabled.level=HIGH

#When should the account disabled alert be triggered.
# 2 possible values:
# AT_LOGON: An alert will be triggered each a time user tries to login to a disabled account.
# WHEN_BLOCKED: An alert will be triggered once when the account got disabled.
#domibus.alert.super.user.account_disabled.moment=WHEN_BLOCKED

#Account disabled mail subject.
#domibus.alert.super.user.account_disabled.subject=Super user account disabled
```

All that was mentioned earlier about console users is also true for the plugin users. There is an identical set of configuration properties for them:

```
# ---------------------------------- Alert management:Authentication module for Plugin users-----------------

#Enable/disable the login failure alert of the authentication module.
#domibus.alert.plugin.user.login_failure.active=true

#Alert level for login failure.
#domibus.alert.plugin.user.login_failure.level=LOW

#Login failure mail subject.
#domibus.alert.plugin.user.login_failure.mail.subject=Login failure

#Enable/disable the account disable alert of the authentication module.
#domibus.alert.plugin.user.account_disabled.active=true

#Alert level for account disabled.
#domibus.alert.plugin.user.account_disabled.level=HIGH

#When should the account disabled alert be triggered.
# 2 possible values:
# AT_LOGON: An alert will be triggered each time a user tries to login to a disabled account.
# WHEN_BLOCKED: An alert will be triggered once when the account got disabled.
#domibus.alert.plugin.user.account_disabled.moment=WHEN_BLOCKED

#Account disabled mail subject.
```

```
#domibus.alert.plugin.user.account_disabled.subject=Account disabled

#Account disabled mail subject.
#domibus.alert.super.user.account_disabled.subject=Super user account disabled
```

18.5. User Password alerts

Domibus is able to track user password expiration and imminent expiration. Obviously the user password expired alert occurs when a user password expires. The number of days the alert should be triggered after the expiration is configurable. The imminent expiration alert occurs a certain time before the user password expiration. The number of days the alert should be triggered before expiration is configurable. The alert frequency for both trackers can be configured.

By default, imminent user password expiration alerts are not activated. In order to activate them, the following property should be set to true:

```
# ---------------------------------- Alert management:Password policy  -----------------

#Enable/disable the imminent password expiration alert
#domibus.alert.password.imminent_expiration.active=true
```

The following properties are already preconfigured with default values and therefore are not mandatory to configure:

```
#Number of days before expiration as for how long before expiration the system should send alerts.
#domibus.alert.password.imminent_expiration.delay_days=15

#Frequency in days between alerts.
#domibus.alert.password.imminent_expiration.frequency_days=3

#Password imminent expiration alert level.
#domibus.alert.password.imminent_expiration.level=LOW

#Password imminent expiration mail subject.
#domibus.alert.password.imminent_expiration.mail.subject=Password imminent expiration
```

By default, Domibus will send user password imminent expiration alerts 15 days before the expiration. It will send alerts at a pace of one alert every 3 days. The level of the alert will be LOW. The last property allows configuring the subject of the mail sent.

By default, user password expired alerts are not activated. In order to activate them, the following property should be set to true:

```
#Enable/disable the certificate expired alert of certificate scanner module.
domibus.alert.password.expired.active=true
```

The following properties are already preconfigured with default values and therefore are not mandatory to configure:

```
#Number of days after expiration as for how long the system should send alerts.
```

```
#domibus.alert.password.expired.delay_days=30

#Frequency in days between alerts.
#domibus.alert.password.expired.frequency_days=5

#Password expiration alert level.
#domibus.alert.password.expired.level=LOW

#Password expiration mail subject.
#domibus.alert.password.expired.mail.subject=Password expired
```

By default, Domibus will send user password expired alerts during 30 days after the expiration. It will send alerts at a pace of one alert every 5 days. The level of the alert will be LOW. The last property allows configuring the subject of the mail sent.

18.6. Plugin User Password alerts

Everything that was explained above about the console users alerts is also true for the plugin users. Their corresponding properties are listed below:

```
# ---------------------------------- Alert management: Plugin Password policy  -----------------

#Enable/disable the imminent password expiration alert
#domibus.alert.plugin_password.imminent_expiration.active=true

#Number of days before expiration as for how long before expiration the system should send alerts.
#domibus.alert.plugin_password.imminent_expiration.delay_days=15

#Frequency in days between alerts.
#domibus.alert.plugin_password.imminent_expiration.frequency_days=3

#Password imminent expiration alert level.
#domibus.alert.plugin_password.imminent_expiration.level=LOW

#Password imminent expiration mail subject.
#domibus.alert.plugin_password.imminent_expiration.mail.subject=Password imminent expiration

#Enable/disable the imminent password expiration alert
#domibus.alert.plugin_password.expired.active=true

#Number of days after expiration as for how long the system should send alerts.
#domibus.alert.plugin_password.expired.delay_days=30

#Frequency in days between alerts.
#domibus.alert.plugin_password.expired.frequency_days=5

#Password expiration alert level.
#domibus.alert.plugin_password.expired.level=LOW

#Password expiration mail subject.
#domibus.alert.plugin_password.expired.mail.subject=Password expired
```

18.7. Certificate scanner alerts

Domibus is able to track certificate expiration and imminent expiration. Obviously the certificate expired alert occurs when a certificate expires. The number of days the alert should be triggered after the expiration is configurable. The imminent expiration alert occurs a certain time before the certificate expiration. The number of days the alert should be triggered before expiration is configurable. The alert frequency for both trackers can be configured.

By default, imminent certificate expiration alerts are not activated. In order to activate them, the following property should be set to true:

```
# ---------------------------------- Alert management: Certificate scanner -----------------

#Enable/disable the imminent certificate expiration alert of certificate scanner module.
domibus.alert.cert.imminent_expiration.active=true
```

The following properties are already preconfigured with default values and therefore are not mandatory to configure:

```
#Number of days before revocation as from when the system should start sending alerts.
#domibus.alert.cert.imminent_expiration.delay_days=61

#Frequency in days between alerts.
#domibus.alert.cert.imminent_expiration.frequency_days=14

#Certificate imminent expiration alert level.
#domibus.alert.cert.imminent_expiration.level=HIGH

#Certificate imminent expiration mail subject.
#domibus.alert.cert.imminent_expiration.mail.subject=Certificate imminent expiration
```

By default, Domibus will send certificate imminent expiration alerts 61 days before the expiration. It will send alerts at a pace of one alert every 14 days. The level of the alert will be HIGH. The last property allows configuring the subject of the mail sent.

By default, certificate expired alerts are not activated. In order to activate them, the following property should be set to true:

```
#Enable/disable the certificate expired alert of certificate scanner module.
domibus.alert.cert.expired.active=true
```

The following properties are already preconfigured with default values and therefore are not mandatory to configure:

```
#Frequency in days between alerts.
#domibus.alert.cert.expired.frequency_days=7

#How long(in days) after the revocation should the system trigger alert for the expired certificate.
#domibus.alert.cert.expired.duration_days=92

#Certificate expired alert level.
#domibus.alert.cert.expired.level=HIGH
```

```
#Certificate expired mail subject.
#domibus.alert.cert.expired.mail.subject=Certificate expired
```

By default, Domibus will send certificate expired alerts during 92 days after the expiration. It will send alerts at a pace of one alert every 7 days. The level of the alert will be HIGH. The last property allows configuring the subject of the mail sent.

18.8. Configuration example

18.8.1. Example: domibus.properties

Below is shown only the section relevant to the alerts configuration in the **domibus.properties** configuration file, when the SMTP server is running in the same host as domibus (localhost):

```
…
…
# ---------------------------------- Alert management ----------------------------------
#Enable/disable the entire alert module. Pay attention to the fact that if the module is activated, all
properties
#under the mandatory section should be configured.
domibus.alert.active=true
#Allow to disable alert mail sending.
domibus.alert.mail.sending.active=true
domibus.alert.mail.smtp.starttls.enable=false
domibus.alert.mail.smtp.auth=false
#domibus.alert.mail.smtp.timeout=10000
# ----------------------------------Mandatory configuration start (if domibus.alert.active=true) ----------
#Smtp server url for sending alert.
domibus.alert.sender.smtp.url=localhost
#Smtp server port.
domibus.alert.sender.smtp.port=25
#Smtp server user.
#domibus.alert.sender.smtp.user=
#Smtp server user password
#domibus.alert.sender.smtp.password=
#Alert sender email.
domibus.alert.sender.email=sender@exemple.com
#Alert email receiver.
domibus.alert.receiver.email=mcb@gmail.com
# ----------------------------------Mandatory configuration end---------------------------------
#The following properties can stay commented if no modifications to the default values are needed.
#Cron configuration for cleaning alerts.
domibus.alert.cleaner.cron=0 0/1 * * * ?
#Lifetime in days of alerts before cleaning.
domibus.alert.cleaner.alert.lifetime=1
#Concurrency to process the alerts.
#domibus.alert.queue.concurrency=1

#Frequency of failed alerts retry.
#domibus.alert.retry.cron=0 0/1 * * * ?
#Elapsed time in minutes between alert retry.
```

```
#domibus.alert.retry.time=1
#Maximum number of attempts for failed alerts
#domibus.alert.retry.max_attempts=2
# ---------------------------------- Alert management:messaging module ----------------
#Enable/disable the messaging alert module.
#domibus.alert.msg.communication_failure.active=true
#Message status change that should be notified by the messaging alert module. Comma separated.
domibus.alert.msg.communication_failure.states=SEND_FAILURE,WAITING_FOR_RETRY
#Alert levels corresponding to message status defined in previous
property(domibus.alert.msg.communication_failure.states) .
#Should be (HIGH, MEDIUM OR LOW)
#domibus.alert.msg.communication_failure.level=HIGH
#Messaging alert module mail subject.
domibus.alert.msg.communication_failure.mail.subject=Message status change MCB
# ---------------------------------- Alert management:Authentication module ----------------
#Enable/disable the login failure alert of the authentication module.
domibus.alert.user.login_failure.active=true
#Alert level for login failure.
#domibus.alert.user.login_failure.level=LOW
#Login failure mail subject.
domibus.alert.user.login_failure.mail.subject=Login failure MCB
#Enable/disable the account disable alert of the authentication module.
#domibus.alert.user.account_disabled.active=true
#Alert level for account disabled.
#domibus.alert.user.account_disabled.level=HIGH
#When should the account disabled alert be triggered.
# 2 possible values:
# AT_LOGON: An alert will be triggered each time a user tries to login to a disabled account.
# WHEN_BLOCKED: An alert will be triggered once when the account got disabled.
domibus.alert.user.account_disabled.moment=WHEN_BLOCKED,AT_LOGON
#Account disabled mail subject.
domibus.alert.user.account_disabled.subject=Account disabled MCB
# ---------------------------------- Alert management:Certificate scanner ----------------
#Enable/disable the imminent certificate expiration alert of certificate scanner module.
domibus.alert.cert.imminent_expiration.active=false
#Number of days before revocation as from when the system should start sending alerts.
domibus.alert.cert.imminent_expiration.delay_days=20000
#Frequency in days between alerts.
#domibus.alert.cert.imminent_expiration.frequency_days=14
#Certificate imminent expiration alert level.
#domibus.alert.cert.imminent_expiration.level=HIGH
#Certificate imminent expiration mail subject.
domibus.alert.cert.imminent_expiration.mail.subject=Certificate imminent expiration MCB
#Enable/disable the certificate expired alert of certificate scanner module.
domibus.alert.cert.expired.active=false
#Frequency in days between alerts.
#domibus.alert.cert.expired.frequency_days=7
#How long(in days) after the revocation should the system trigger alert for the expired certificate.
#domibus.alert.cert.expired.duration_days=90
#Certificate expired alert level.
#domibus.alert.cert.expired.level=HIGH
#Certificate expired mail subject.
domibus.alert.cert.expired.mail.subject=Certificate expired MCB
```

```
# ---------------------------------- UI Replication ----------------------------------
….
```

18.8.2. Example: domain_name-domibus.properties

Below is shown only the section relevant to the alerts configuration in the **dom50-domibus.properties** configuration file, where dom50 is the name of a domain:

```
…
#Pull Retry Worker execution interval as a cron expression
#dom50.domibus.pull.retry.cron=0/10 * * * * ?
# ---------------------------------- Alert management ----------------------------------
#Enable/disable the entire alert module. Pay attention to the fact that if the module is activated, all
properties
#under the mandatory section should be configured.
dom50.domibus.alert.active=true
#Allow to disable alert mail sending.
dom50.domibus.alert.mail.sending.active=true
# ----------------------------------Mandatory configuration start (if domibus.alert.mail.sending.active=true) ---
#Alert sender email.
dom50.domibus.alert.sender.email=mcb@gmail.com
#Alert email receiver.
dom50.domibus.alert.receiver.email=mcb@gmail.com
# ----------------------------------Mandatory configuration end----------------------------------
#The following properties can stay commented if no modifications to the default values are needed
…
```

19. UIREPLICATION FEATURE

19.1. Description

This feature has been introduced in order to assure a faster search on Admin Console Messages page when the database contains more than 100k messages and the time to perform a search is longer.

It uses a flat table called TB_MESSAGE_UI instead of the 5-6 native message tables and a JMS queue to synchronize data between.

19.2. Configuration and first synchronization of data

By default the UIReplication is disabled. To enable it set the following property to true:

```
#enabled or disabled the UI Replication mechanism
domibus.ui.replication.enabled=true
```

Just before enabling there are several things to check:

Step 1:

- if there was a migration from 4.1.3 to 4.0 for example and the oracle/mysql*-3.3.4-to-4.0-migration.ddl script has been run then the data has been migrated from native tables into TB_MESSAGE_UI

So run this query and check if the result is greater than 0 (zero):

```
SELECT COUNT(*) FROM TB_MESSAGE_UI
```

If yes, go to Step 2 and if not go to Step 3.

- if there was no migration from 3.3.4 (for example) and just a fresh install then go to Step 2

Step 2:

- check if there is unsynchronized data between native tables and TB_MESSAGE_UI by running this query:

```
SELECT COUNT(*) FROM V_MESSAGE_UI_DIFF
```

If the query returns 0 (zero) then proceed to enable the UIReplication as above. If not, go to Step 3

Step 3:

UIReplication data could be synchronized for the first time in two ways:

1. running the oracle/mysqlinnoDb-xyz-uireplication-insert.sql script present in distribution packages in which case the TB_MSSAGE_UI should be empty before (the recommended way)

2. calling REST method /rest/uireplication/sync (for small amount of unsynchronized data)

Observation: the oracle-xyz-uireplication-insert.sql contains an Oracle hint for faster insertion of the data (/*+ append/) which is not fully supported in some versions of Oracle 11g. In case of any warnings, just remove this hint and do a normal INSERT.

Additionally, there is a cron job which has the purpose of checking any unsynchronized data and is set to run daily at 2 AM. In order to change the time of day, edit or add the following property:

```
#Cron job that will check unsynchronized data between native tables and TB_UI_MESSAGE_UI
domibus.ui.replication.sync.cron=0 0 2 * * ?
```

Also for the cron job there is another property which defines the maximum number of messages to be synchronized and could be added / edited in domibus.properties file:

```
#max number of records that will be processed by cron job
domibus.ui.replication.sync.cron.max.rows=10000
```

If there are more messages than this limit there will be no synchronization done and a warning will be issued in the log file suggesting that the user should use the REST resource instead.

19.3. REST resources

There are two REST resources which could be useful for manual synchronization and works when UIReplication is enabled.

Assuming that <http://<server>:<port>/domibus/> points to your Domibus installation, please login first into Admin Console.

19.3.1. Count method

Enter this address on your browser:

```
http://<server>:<port>/domibus/rest/uireplication/count
```

This will return the number of unsynchronized records. If this count is equal to zero it means that the UI replication data is synchronized.

19.3.2. Sync method

Enter this address on your browser:

```
http://<server>:<port>/domibus/rest/uireplication/sync

or

http://<server>:<port>/domibus/rest/uireplication/sync?limit=x
```

Where:

- limit=x parameter could be optional and has a default value of 10.000

Calling this will perform a synchronization of the data for the first 'x' records.

19.4. Recommendations

1. As described in the previous paragraph about first synchronization of data on large volume of records, generally over 100k, running the query:

```
SELECT COUNT(*) FROM V_MESSAGE_UI_DIFF
```

could take some time (several seconds) to complete.

So for Oracle we could use the PARALLEL hint:

```
SELECT COUNT(*) /*+ PARALLEL(8) */ FROM V_MESSAGE_UI_DIFF
```

Or use the REST method /rest/uireplication/count which internally has the same optimization.

2. Do not setup UIReplicationJob to run more than once per day as running too often could interfere with the internal mechanism of synchronization.

3. Searching into Admin Console Messages page could be slower for some criteria, in that case just analyze the queries and add more indexes on TB_MESSAGE_UI table.

By default, Domibus is creating indexes on message type, message status, received date and message subtype and not on all combinations of the search criteria of Admin Console messages page because this is up to the user to know which ones are the most used.

For Oracle some tools like SQLDeveloper, Explain Plan and Tunning Advisor could be used to analyze the queries and add more indexes.

20. DSS EXTENSION CONFIGURATION

20.1. Overview

Domibus now offers the possibility to perform incoming messages certificate chain validation with the DSS library instead of the truststore. In order to achieve chain validation with DSS, Domibus security policy should be configured with a PKI path (see the file “eDeliveryAS4Policy_BST_PKIP.xml” in the distribution).
When PKI path is used, the full chain of certificate that contains the signing and its trust certificates is embedded in the security header of the SOAP message.
Domibus DSS extension will download and use per default the European list of trusted lists (LOTL).

Dominus can verify the trust anchor of any certificate chain having a certificate authority present within the LOTL.

The DSS extension also permits to configure custom trusted lists with additional certificate authorities.

DSS generates a validation report with different constraints and status. The DSS extension allows configuring the relevant constraints for the validation.

20.2. Installation

20.2.1. Enable Unlimited Strength Jurisdiction Policy

- Before Java 8 Update 151

For Java 8 Update 144 and earlier, you need to install the Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy files:

1. Download the unlimited strength JCE policy files from Oracle here
2. Extract the downloaded file
3. Replace the existing policy JAR files in $JAVA_HOME/jre/lib/security with the extracted unlimited strength policy JAR files

- Java 8 Update 151 and higher

The Unlimited Strength Jurisdiction Policy is included but not used by default. To enable it, you need to edit the java.security file in $JAVA_HOME/jre/lib/security (for JDK) or $JAVA_HOME/lib/security (for JRE). Uncomment (or include) the line:

```
crypto.policy=unlimited
```

20.2.2. Download and install DSS extension

For this step, you will have to use the following resources (see section §3.1–"*Binaries repository*" for the download location):

- **domibus-distribution-X.Y.Z-authentication-dss-extension.zip**

Unzip the artefact and copy the extensions directory under ${domibus.config.location}

20.2.3. Configure proxy

In order to refresh the EU LOTL, DSS needs to connect to the internet. No white list can be configured at the proxy level, as changes in EU LOTL are dynamic. Therefore, the DSS extension needs dynamic internet access.

If a proxy is required, please configure the following properties within ${domibus.config.location}/extensions/config/authentication-dss-extension.properties:

```
# The https proxy host to use
#domibus.authentication.dss.proxy.https.host=

# The https proxy port to use
#domibus.authentication.dss.proxy.https.port=

# The https proxy user to use
#domibus.authentication.dss.proxy.https.user=

# The https proxy password to use
#domibus.authentication.dss.proxy.https.password=

# The https proxy excluded hosts. Allows multiple urls (separator ',', ';' or ' ')
#domibus.authentication.dss.proxy.https.excludedHosts=

# The http proxy host to use
#domibus.authentication.dss.proxy.http.host=

# The http proxy port to use
#domibus.authentication.dss.proxy.http.port=

# The http proxy user to use
#domibus.authentication.dss.proxy.http.user=

# The http proxy password to use
#domibus.authentication.dss.proxy.http.password=

# The http proxy excluded hosts. Allows multiple urls (separator ',', ';' or ' ')
#domibus.authentication.dss.proxy.http.excludedHosts=
```

Note: If the proxy server needs TLS authentication, please add the CA certificate of the proxy server in the java cacert or in the dss-tls-truststore described below.

20.2.4. DSS extension truststores

The DSS extension uses truststores for two reasons:

- Store TLS certificates of servers containing the trusted lists to download.
- Store public certificates to verify the xml signature of the trusted lists.

Separate truststores are used for xml signature verification and tls. The Dss extension distribution is provided with two truststores:

dss-tls-truststore.p12

This trustore already contains a few certificates needed for the official LOTL. Any TLS certificate needed for downloading custom trusted lists should be installed in the dss-tls-truststore.

ojkeystore.p12

The EU LOTL downloaded by DSS is signed, and in order to verify the signature, a truststore containing public certificates located at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C_.2019.276.01.0001.01.ENG needs to be configured. Those certificates are packaged in the ojkeystore.

In case LOTL signing certificates need to be upgraded, please copy them from above url and add them to the ojkeystore.p12.

Please note, that if the DSS extension is configured with custom trusted lists, a third truststore should be configured to check the custom trusted list signature.

20.2.5. Configure LOTL truststore

Please copy truststore\ojkeystore.p12 to ${domibus.config.location}/keystores directory.

Please copy truststore\dss-tls-truststore.p12 to ${domibus.config.location}/keystores directory and add any required TLS certificate to it.

20.2.6. Configure custom trusted list

If a certificate chain with a CA not present in the LOTL needs to be used, DSS offers the possibility to configure custom trusted list. Please refer to the DSS documentation.

If a custom trusted list is required, please configure the following properties within ${domibus.config.location}/extensions/config/authentication-dss-extension.properties:

```
# Following properties should be used to add custom trusted list.
# Custom trusted list url
# domibus.authentication.dss.custom.trusted.lists.list1.url=

# The custom trusted list country code
#domibus.authentication.dss.custom.trusted.lists.list1.code=

# Path of the keystore containing the certificate used to sign the custom trusted list
#domibus.authentication.dss.custom.trusted.list.keystore.path=

# The Keystore type
#domibus.authentication.dss.custom.trusted.list.keystore.type=

# The Keystore password
#domibus.authentication.dss.custom.trusted.list.keystore.password=
```

If multiple custom trusted lists are needed, please add the new url and code property and increment the list number.

Eg:

```
# Custom trusted list url
#domibus.authentication.dss.custom.trusted.lists.list2.url=

# The custom trusted list country code
#domibus.authentication.dss.custom.trusted.lists.list2.code=
```

As for EU LOTL, custom trusted lists are signed and DSS will verify the signature of the custom trusted lists before using it.

Please use domibus.authentication.dss.custom.trusted.list.keystore.path/type/password to configure a truststore containing the certificate needed to verify the custom trusted list signature. The recommendation is to add the custom trusted list truststore under ${domibus.config.location}/keystores.

20.2.7. Configure Pmode policy

To perform certificate validation, the DSS extension expects to find the full signing certificate chain within the incoming AS4 message. To do so, Domibus should be configured with a security policy configured with WssX509PkiPathV1Token11 as described in the WS-SecurityPolicy document.

Remarks

At startup, DSS generates stacktraces due to 2 old certificates which are wrongly encoded.
To avoid the exceptions, please configure your logger for the “eu.europa.esig.dss.tsl.service.TSLParser” class accordingly.

20.2.8. Dss extension activation

In order to activate the DSS extension, please configure the following property:

domibus.extension.iam.authentication.identifier=DSS_AUTHENTICATION_SPI within ${domibus.config.location}/domibus.properties

20.3. DSS extension properties

domibus.authentication.dss.official.journal.content.keystore.type	PKCS12	Type of keystore containing the public certificate needed to validate the trusted list.
domibus.authentication.dss.official.journal.content.keystore.path	${domibus.config.location}/keystores/ojkeystore.p12	#Path of the keystore containing the public certificate needed to validate the trusted list.
domibus.authentication.dss.official.journal.content.keystore.password	dss-password	#Password of the keystore containing the public certificate needed to validate the trusted list.

domibus.authentication.dss.current.official.journal.url	https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C_.2019.276.01.0001.01.ENG	#Url: Official Journal URL where the EU trusted certificates are listed.
domibus.authentication.dss.current.lotl.url	https://ec.europa.eu/tools/lotl/eu-lotl.xml	#Official EU URL of the list of trusted lists.
domibus.authentication.dss.lotl.country.code	EU	#List of trusted list main code.
domibus.authentication.dss.lotl.root.scheme.info.uri	https://ec.europa.eu/information_society/policy/esignature/trusted-list/tl.html	#Schema used to verify the OJ validity.
domibus.authentication.dss.cache.path	${domibus.config.location}/extensions/cache/dss/	#Path where trusted lists are cached.
domibus.authentication.dss.refresh.cron	0 0 0/3 * * ?	#Cron expression used to schedule DSS trusted list refresh. Default is every 3h.
domibus.authentication.dss.full.tls.refresh	false	# If this property is true, the TL refresh job will force delete on all Trusted lists and download them again.
domibus.authentication.dss.constraints.constraint1.name	BBB_XCV_CCCBB	Name of the first constraint that will be validated against the DSS validation report. BBB_XCV_CCCBB checks whether the certificate chain can be built till the trust anchor.
domibus.authentication.dss.constraints.constraint1.status	OK	#Constraint status needed to validate the certificate.
domibus.authentication.dss.constraints.constraint2.name		Empty value, giving the possibility to make a second DSS constraint validation.
domibus.authentication.dss.constraints.constraint2.status		#Constraint status needed to validate the certificate.
domibus.authentication.dss.constraint.name[1]	BBB_XCV_ICTIVRSC	Name of the second constraint that will be validated against the DSS validation report. BBB_XCV_ICTIVRSC checks whether the current time is in the validity range of the signer's certificate.
domibus.authentication.dss.constraint.status[1]	OK	#Constraint status needed to validate the certificate.
domibus.authentication.dss.enable.custom.trusted.list.for.multitenant	false	In multi-tenant configuration, custom DSS trusted lists are shared by all tenants. Therefore they are deactivated by default.

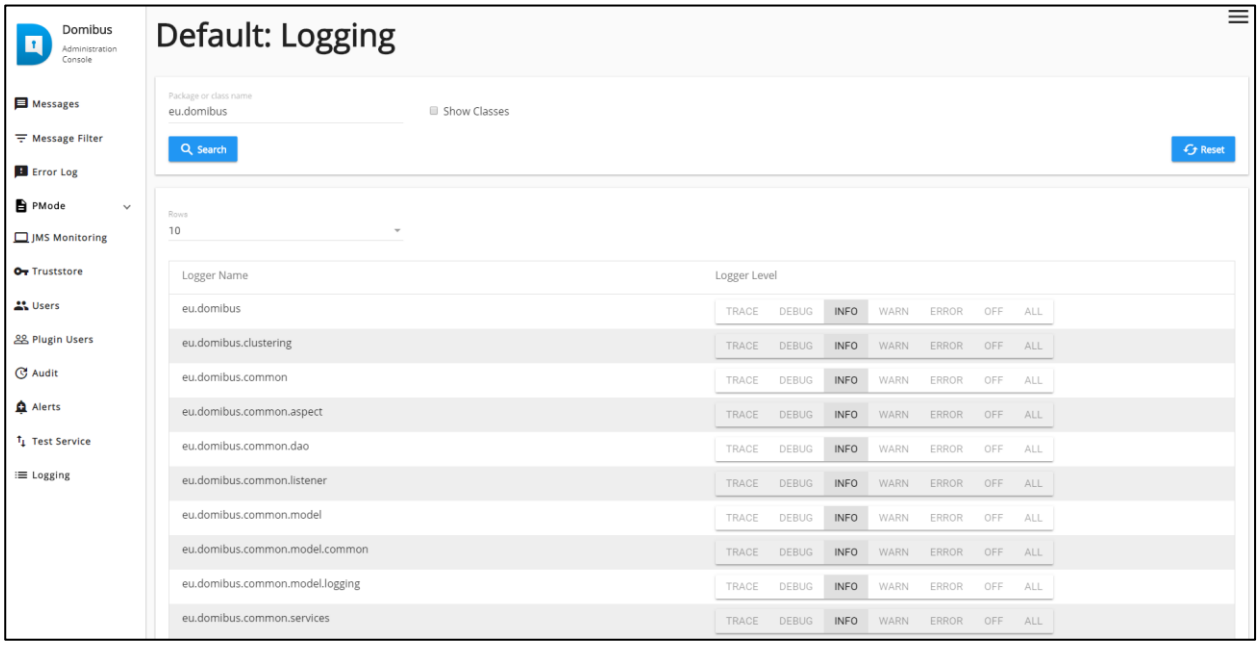
domibus.authentication.dss.exception.on.missing.revocation.data	false	Trigger an exception when no revocation data is accessible.
domibus.authentication.dss.check.revocation.for.untrusted.chains	false	Execute revocation check when anchor cannot be found.
domibus.authentication.dss.custom.trusted.lists.list1.url=		Following properties should be used to add the first custom trusted list URL.
domibus.authentication.dss.custom.trusted.lists.list1.code=		Following properties should be used to add the first custom trusted list code.
domibus.authentication.dss.custom.trusted.lists.list1.url		Following properties should be used to add the second custom trusted list URL.
domibus.authentication.dss.custom.trusted.lists.list2.code		Following properties should be used to add the second custom trusted list code.
domibus.authentication.dss.custom.trusted.lists.list3.url		Following properties should be used to add the third custom trusted list URL.
domibus.authentication.dss.custom.trusted.lists.list3.code		Following properties should be used to add the third custom trusted list code.
domibus.authentication.dss.custom.trusted.lists.list2.code		Following properties should be used to add the second custom trusted list code.
domibus.authentication.dss.custom.trusted.list.keystore.path		Path of the keystore containing the certificate used to sign the custom trusted list.
domibus.authentication.dss.custom.trusted.list.keystore.type		The custom trusted list Keystore type.
domibus.authentication.dss.custom.trusted.list.keystore.password		The custom trusted list Keystore password.
domibus.authentication.dss.proxy.https.host		The https proxy host to use.
domibus.authentication.dss.proxy.https.port		The https proxy user to use.
domibus.authentication.dss.proxy.https.user		The https proxy password to use.
domibus.authentication.dss.proxy.https.excludedHosts		The https proxy excluded hosts. Allows multiple URL's (separator ',', ';' or ' ').
domibus.authentication.dss.proxy.http.host		The http proxy host to use.
domibus.authentication.dss.proxy.http.port		The http proxy port to use.

domibus.authentication.dss.proxy.http.user		The http proxy user to use.
domibus.authentication.dss.proxy.http.password		The http proxy password to use.
domibus.authentication.dss.proxy.http.excludedHosts		The http proxy excluded hosts. Allows multiple URL's (separator ',', ';' or ' ').
domibus.authentication.dss.cache.name	dss-cache	Name of the ehcache configured for DSS.
domibus.dss.ssl.trust.store.path	${domibus.config.location}/keystores/dss-tls-truststore.p12	TLS truststore for dss dataloader. Should contain all the TLS certificate needed to download the EU LOTL and Custom trusted lists.
domibus.dss.ssl.trust.store.password	dss-tls	TLS truststore password for dss dataloader
domibus.dss.ssl.trust.store.type	JKS	# TLS truststore type dss dataloader.
domibus.dss.perform.crl.check	false	Perform crl check within dss. False by default as it is perfomed by domibus.

21. SETTING LOGGING LEVELS AT RUNTIME

21.1. Description

Admin and Super admin users can change the Logging levels at runtime for the Domibus application using the Admin Console 'Logging' menu:



Input elements include:

- A **Search box** where the user could freely enter the name of the package of classes desired to set the logging level. By default this is populated with 'eu.domibus' value.

  Note that wildcards are not accepted like 'domi*' are not recognised. Users must enter the full description of the item to be searched (e.g:'domibus' or 'apache')

- A **Show classes** check box allows level setting for each package. See the next picture

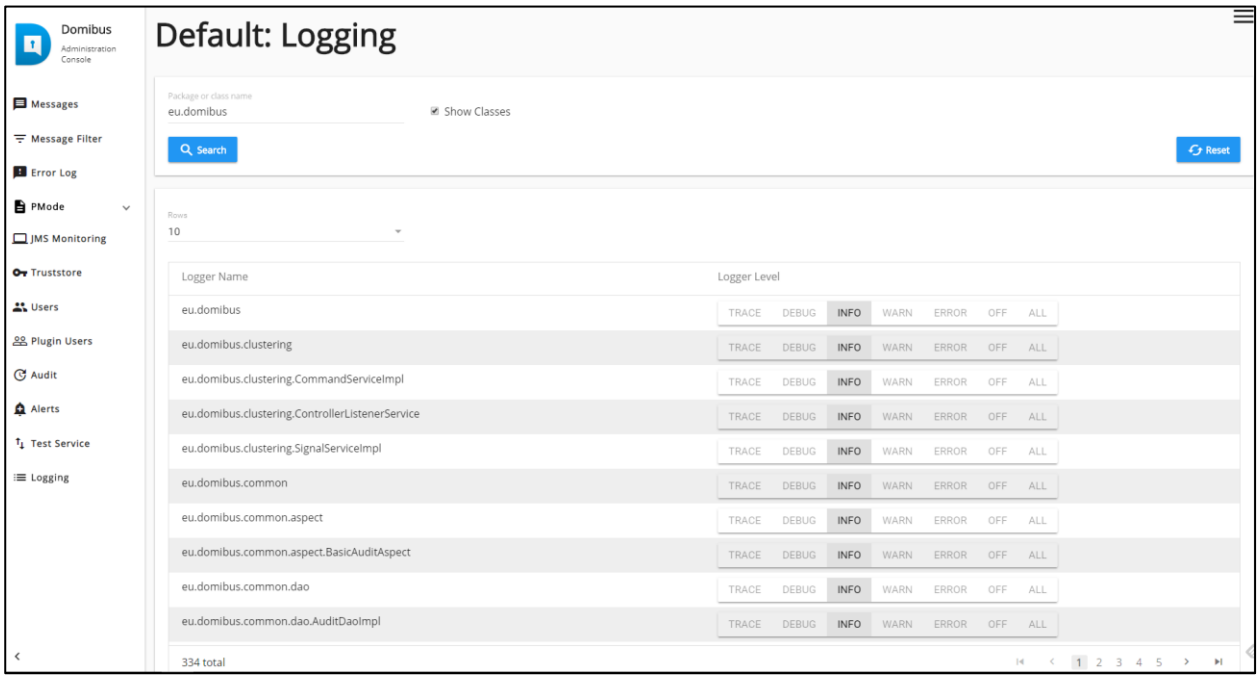
- A **Reset button** will reset all logging levels to the default values defined in logback.xml

- **Pagination** controls to change the number of rows to be shown per page

Remark:

- *The feature is Multi-tenancy agnostic, meaning any changes will apply to all Domains logging levels.*

- *Changing the logging levels only affects the currently running instance of Domibus and will not change or update the existing logging configuration file (logback.xml).*


Domibus
Administration Console
Messages
Message Filter
Error Log
PMode
JMS Monitoring
Truststore
Users
Plugin Users
Audit
Alerts
Test Service
Logging
Default: Logging
Package or class name
eu.domibus
Show Classes
Search
Reset
Rows
10
Logger Name
Logger Level
eu.domibus
eu.domibus.clustering
eu.domibus.clustering.CommandServiceImpl
eu.domibus.clustering.ControllerListenerService
eu.domibus.clustering.SignalServiceImpl
eu.domibus.common
eu.domibus.common.aspect
eu.domibus.common.aspect.BasicAuditAspect
eu.domibus.common.dao
eu.domibus.common.dao.AuditDaoImpl
TRACE DEBUG INFO WARN ERROR OFF ALL
334 total
1 2 3 4 5

22. EU LOGIN (ECAS) INTEGRATION

22.1. Description

Domibus is configured by default to use its own database for user authentication and authorization, as seen in previous chapters.

But Domibus could also be configured and installed to use ECAS (EU Login) for user authentication and authorization (even if this is not provided by default by EU Login).

ECAS is the **E**uropean **C**ommission **A**uthentication **S**ervice[1] that enables web applications to authenticate centrally with a common **strong password**, offering more security than the current LDAP password. It offers also **single sign-on** between applications using it. More details could be found on internal Confluence page:
https://webgate.ec.europa.eu/CITnet/confluence/pages/viewpage.action?pageId=24641907

Domibus with EU Login integration is available only for WebLogic server.

22.2. Installation and Configuration

22.2.1. *Installation*

For installation of Domibus with EU Login (ECAS) please follow below steps:

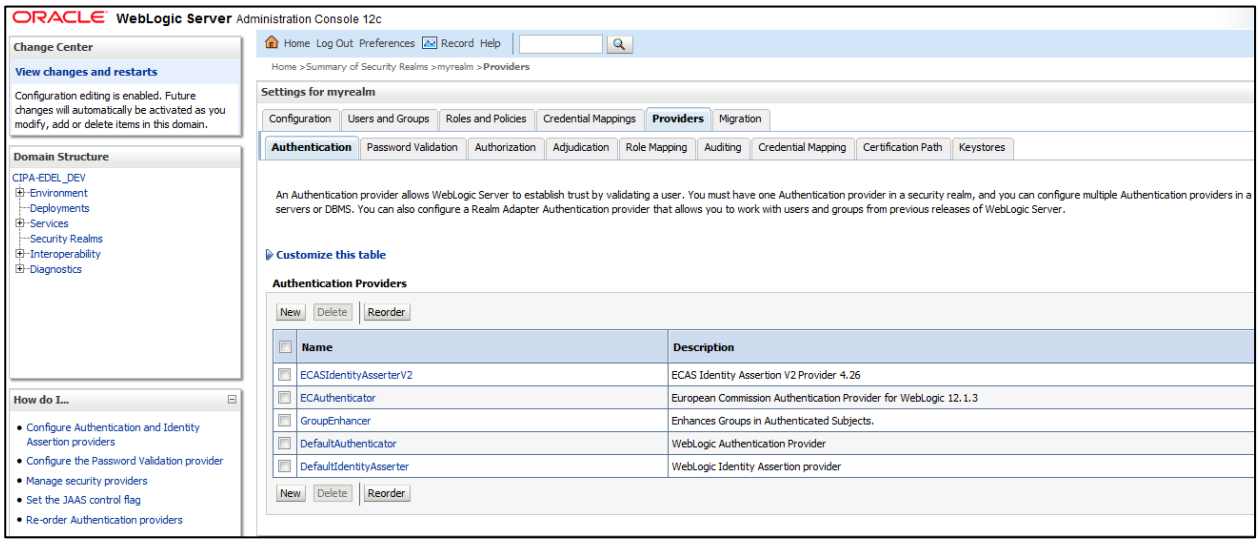
a. create DB schemas as per previous chapters for a single tenancy or Multitenancy installation

b. download domibus-distribution-xyz-weblogic-ecas-configuration.zip and domibus-distribution-xyz-weblogic-ecas-war.zip

c. install and configure Domibus war and configuration files into WebLogic server – follow WebLogic guidelines as per previous chapters

d. check that in WebLogic server has latest compatible ECASIdentityAsserter installed: go to the WebLogic Server console -> Security Realms -> myrealm -> Providers:

[1] Click here for more information on EU Login.



e. Configure ecas-config-domibus.xml file and install it in the classpath of WebLogic server

An example of ecas-config-domibus.xml file is:

```
<client-config xmlns="https://www.cc.cec/cas/schemas/client-config/ecas/1.8"
        xmlns:cas="https://www.cc.cec/cas/schemas/client-config/cas/2.0">


  <ecasBaseUrl>https://ecasa.cc.cec.eu.int:7002</ecasBaseUrl>

  <groups>
    <group>*</group>
  </groups>

  <acceptStrengths>
    <strength>STRONG</strength>
                <strength>STRONG_SMS</strength>
    <strength>CLIENT_CERT</strength>
  </acceptStrengths>

  <assuranceLevel>LOW</assuranceLevel>
  <!-- renew is false only for local in order to speedup the development-->
  <cas:renew>true</cas:renew>
  <requestingUserDetails>true</requestingUserDetails>

</client-config>
```

For more details about steps d. and e., please refer to EU Login documentation on Confluence pages provided above.

22.2.2. Configuration

When a user is authenticated against EU Login he or she has certain LDAP groups associated with him. These groups will be used for Domibus to map:

- User roles: AP_ADMIN, ADMIN and USER

- Default domain

The mapping of these groups is done in **domibus.properties** which needs to be changed accordingly. Look for the section related to EU Login mappings and update it:

domibus.security.ext.auth.provider.group.prefix=DIGIT_DOM

This is the prefix of EU Login LDAP groups that Domibus will take in account.

domibus.security.ext.auth.provider.user.role.mappings=DIGIT_DOMRUSR=ROLE_USER;DIGIT_DOMRADM=ROLE_ADMIN;DIGIT_DOMRSADM=ROLE_AP_ADMIN;

This property will map each EU Login LDAP group to a corresponding Domibus user role. If one user has more than one LDAP group/role associated, the role with the broader rights will be chosen.

domibus.security.ext.auth.provider.domain.mappings=DIGIT_DOMDDOMN1=domain1;

This property will map an EU Login LDAP group to a Domibus domain: it is useful in a Multitenancy installation, as in single tenancy all users are mapped to Default domain.

If the current user has no roles/LDAP groups or domain associated, he/she could still authenticate but he or she will not have the privileges to use the Domibus console.

```
# ---------------------- EU Login mappings -------------------------------------
# all EU Login groups used by Domibus should have this prefix
domibus.security.ext.auth.provider.group.prefix=DIGIT_DOM

# pairs of strings separated by semicolons to map Domibus user roles to EU Login LDAP groups
# the format is
LDAP_GROUP_USER=ROLE_USER;LDAP_GROUP_ADMIN=ROLE_ADMIN;LDAP_GROUP_AP_ADMIN=ROLE_AP_ADMIN;
# last semicolon is mandatory
domibus.security.ext.auth.provider.user.role.mappings=DIGIT_DOMRUSR=ROLE_USER;DIGIT_DOMRADM=ROLE_ADMIN;DIGIT_DOMRSADM=ROLE_AP_ADMIN;

# pairs of strings separated by semicolons to map Domibus domain codes to EU Login LDAP groups
# the format is LDAP_GROUP_DOMAIN1=domain1;LDAP_GROUP_DOMAIN2=domain2;
# last semicolon is mandatory
domibus.security.ext.auth.provider.domain.mappings=DIGIT_DOMDDOMN1=domain1;
```

22.3. Domibus UI changes

When the user first tries to access Domibus at the address http://server:port/domibus, he/she will be redirected to the EU Login page where he/she will fill in the username and password. After successfully entering his/her credentials, he/she will be redirected to the Domibus User Interface.

His/her username will appear on the right corner on the Domibus Admin console but the some options will be greyed out (not accessible anymore):

- Change Password (from top right menu), as the password change is managed by the EU Login
- Users (from left menu): adding or editing existing users will not be possible

23. DOMIBUS STATISTICS

Dropwizard library has been added to Domibus allowing administrators to monitor Domibus with JVM and custom metrics.

23.1. Metrics type

23.1.1. JVM metrics

Memory usage

A set of gauges for JVM memory usage, including stats on heap vs. non-heap memory, plus GC-specific memory pools.

Memory metrics can be added or removed by modifying the following domibus property:

```
#Activate drop wizard memory metrics
domibus.metrics.monitor.memory=true
```

Garbage collector

Contains a set of gauges for the counts and elapsed times of garbage collections.

Garbage collector metrics can be added or removed by modifying the following domibus property:

```
#Activate drop wizard gc metrics
domibus.metrics.monitor.gc=true
```

Threads

Thread metrics can be added or removed by modifying the following domibus property:

```
#Activate drop wizard cached threads metrics
domibus.metrics.monitor.cached.threads=true
```

23.1.2. Custom metrics

Custom metrics to monitor messages exchange are also available for the following flows:

- Incoming UserMessage
- Incoming UserMessage receipt
- Incoming PullRequest
- Incoming PullRequest receipt
- Outgoing UserMessage
- Outgoing PullRequest

- Outgoing PullRequest receipt

  Each of them will have a Dropwizard counter and timer metrics configuration. Please refer to Dropwizard documentation. (https://metrics.dropwizard.io/3.1.0/manual/core/#timers, https://metrics.dropwizard.io/3.1.0/manual/core/#counters).

23.1.3. JMS Queues count metrics

This metrics will monitor the count of JMS queues.

In order to enable it, please set the following Domibus property to true:

```
#Activate drop wizard JMS Queues metrics
domibus.metrics.monitor.jms.queues=true
```

The following property will establish the interval (in seconds) upon the JMS count are recalculated:

```
# how long (in seconds) the JMS count will be cached
# defaults to 0 - the count isn't cached
domibus.metrics.monitor.jms.queues.refresh.period=0
```

The last property to set: by default only DLQ queue count is shown. Set to false in order to add metrics for all JMS queues:

```
# show counts only for DLQ queue
domibus.metrics.monitor.jms.queues.show.dlq.only=true
```

23.2. Metrics access

23.2.1. Log file

In order to log the metrics under the statistics.log file, please set the following property to true (default):

```
#Enable sl4j reporter for dropwizard metrics.
domibus.metrics.sl4j.reporter.enable=true
```

In case of upgrade, please follow the upgrade procedure to add the relevant appender and logger within the logback.xml file.

23.2.2. Servlet

Statistics can also be visualized within the browser under the following URL:

<server url>/domibus/metrics

23.2.3. Jmx

In order to access the metrics via jmx, please set the following property to true:

```
#Enable jmx reporter for dropwizard metrics. The following warning:
#We don’t recommend that you try to gather metrics from your production environment. JMX’s RPC API
```

```
is fragile.
#For development purposes and browsing, though, it can be very useful.
domibus.metrics.jmx.reporter.enable=false
```

24. PAYLOAD ENCRYPTION

Data at rest is not encrypted by default in Domibus. This means that the payloads are stored in C2 exactly as they were received from C1. The same for payloads received from C2 and stored in C3.

The payloads stored in C2 and C3 are not accessible to third parties. Nevertheless, it is a good practice to encrypt the payloads in order to increase the security level.

Data at rest encryption can be activated using the property *domibus.payload.encryption.active=true.* Once activated, Domibus encrypts the payloads stored in C2 and C3 using symmetric encryption with *AES/GCM/NoPadding* algorithm. Domibus generates the symmetric key used to encrypt payloads the first time the payload encryption is activated. The generated symmetric key is stored in the Domibus database. A symmetric key is generated for each domain in case of multitenancy.

Encrypting data at rest is transparent for C1/C4, so if C4 downloads a message from C3, it will receive the payloads un-encrypted as they were sent by C1.

25. Message Prioritization

25.1. Introduction

When Domibus C2 receives concurrently from C1 a lot of *UserMessages* to be sent, it cannot keep the pace of sending *UserMessages* to C3. Consequently, JMS messages start accumulating in the *SendMessageQueue*.

As the JMS messages from the *SendMessageQueue* are processed in a random order, for some *UserMessages* there might be a big delay between the time C1 submits a message to C2 for sending and the actual sending of the *UserMessage* from C2 to C3.

Moreover, in some use cases there is a need to assign a high priority to some *UserMessages*. Due to their urgency, these high priority messages must be sent as soon as possible regardless of when they have been submitted to C2.

25.2. Solution overview

Domibus assigns a priority to each *UserMessage* based on service and action when the message is submitted by C1. All *UserMessages* are scheduled for sending using the existing *SendMessageQueue.*

There are two options for processing messages from the *SendMessageQueue:*

1. Using the underlying JMS infrastructure if it supports message priority on a message queue
2. Using dedicated JMS listeners (with a specific concurrency) for each configured message priority that consumes only JMS messages having the configured priority using a JMS selector. This solution can also take advantage on the JMS infrastructure support for message priority

25.3. Solution detail

Domibus C2 assigns a priority to each *UserMessage* it receives from C1 to implement message prioritization. The *UserMessage* priority is determined based on the service and action values of the *UserMessage*. The priority varies from 1 to 9, 1 for low priority messages and 9 for high priority messages.

For instance, for the following service and action values from the *UserMessage*:

```
<eb:CollaborationInfo>

    <eb:Service type="tc1">bdx:noprocess</eb:Service>

   <eb:Action>TC1Leg1</eb:Action>

</eb:CollaborationInfo>
```

In order to assign a priority to the above *UserMessage* a priority rule name must be defined first in *domibus.properties* configuration file.

For instance, one can define a priority rule named **medium**:

domibus.dispatcher.priority.medium=Medium priority messages

Once the rule name is defined, other properties, like service, action, priority and concurrency can be also defined using the rule name. As we will see in the next sections the *concurrency* property is optional. For instance:

domibus.dispatcher.priority.medium.service= bdx:noprocess

domibus.dispatcher.priority.medium.action= TC1Leg1, TC1Leg2, TC1Leg3

domibus.dispatcher.priority.medium.value=5

domibus.dispatcher.priority.medium.concurrency=10-15

The action property configured for a specific rule supports a list of action values separated by comma. The action property will match if any of the list of actions will match. In the example above we have configured for instance three actions values separated by comma.

When a *UserMessage* having a service/action combination is matching a service/action combination configured for a priority rule, the priority configured for the matching rule will be assigned to the *UserMessage.*

It is not mandatory to configure both service and action for a priority rule. Only the service or only the action can be configured, in which case the priority will match if the service or the action configured will match.

Note: service/action combinations configured for routing rules must be unique.

After the priority of the *UserMessage* has been determined, C2 schedules the *UserMessage* for sending it to C3. This is performed by sending a JMS message to the *SendMessageQueue* containing the message id of the message to be sent and the message priority using *JMSPriority* header. For the example above the priority assigned to the message will be 5.

Once that the priority has been determined for each *UserMessage/JMSMessage*, there are two options for processing messages from the *SendMessageQueue:*

25.3.1. Using the underlying JMS infrastructure

This solution can be used if the underlying JMS infrastructure supports message priority on a message queue. Such infrastructure will guarantee the priority delivery of high priority messages using the *JMSPriority* header value. This approach is suited when there are low to medium number of high priority messages processed by the system.

In this case there is only one JMS listener that is consuming JMS messages from the *SendMessageQueue.* This JMS listener is the default listener that is used by Domibus to process all JMS messages from the *SendMessageQueue,* regardless if message prioritization is used. The default JMS listener can be configured in *domibus.properties* in the *Dispatcher* section.

Please find below an example on how to configure a rule for medium priority messages, the *concurrency* property is not used:

domibus.dispatcher.priority.medium.service= bdx:noprocess

domibus.dispatcher.priority.medium.action= TC1Leg1, TC1Leg2, TC1Leg3

domibus.dispatcher.priority.medium.value=5

In case the *SendMessageQueue* is flooded with high priority messages only the high priority messages will be consumed(most of JMS brokers will try to deliver high priority messages first), leaving the lower priority messages in the queue potentially for long periods of times(in extreme cases even days). For this specific case, the solution from the next section is more suited.

25.3.2. Using dedicated JMS listeners (with a specific concurrency) for each configured message priority

This approach is suited in case a finer level of granularity it desired to JMS message consumption or for tackling the case mentioned above when high priority messages are flooding the system. In this scenario we have a quality of service which gives a chance to lower priority messages to be consumed.

In this scenario, dedicated JMS listeners (with specific concurrency) consume only the JMS messages with a specific priority given by the *JMSPriority* header. This is performed using a JMS selector filtering messages for each configured message priority. This solution can also take advantage on the JMS infrastructure support for message priority.

At start up Domibus reads all the priority rules configured in *domibus.properties*. For each configured priority rule with a defined *concurrency* property, Domibus creates programmatically a JMS listener with a specific JMS selector listening to the *SendMessageQueue*.

Please find below an example on how to configure a rule for medium priority messages with a JMS selector, the *concurrency* property is mandatory:

domibus.dispatcher.priority.medium.service= bdx:noprocess

domibus.dispatcher.priority.medium.action= TC1Leg1, TC1Leg2, TC1Leg3

domibus.dispatcher.priority.medium.value=5

domibus.dispatcher.priority.medium.concurrency=10-15

Multiple JMS listeners are listening the *SendMessageQueue* using a JMS selector that considers the message priority. JMS listeners that are processing messages with high priority can have a higher concurrency assigned, meaning multiple threads are assigned to process concurrently high priority messages. This way high priority messages can be processed faster than messages with lower priority.

UserMessages not matching any priority rule will be scheduled on the same *SendMessageQueue* and handled by a default JMS listener configured with a specific concurrency. This way it is not mandatory to define a priority rule for all messages. The default JMS listener serves as a catch all messages if they do not match any priority rule.

To understand the solution, the following example contains a configuration with 3 JMS listeners for handling messages with low, medium and high priority.

#low priority

domibus.dispatcher.priority.low=Low priority messages

domibus.dispatcher.priority.low.service= service1

domibus.dispatcher.priority.low.action= action2

domibus.dispatcher.priority.low.value= 1

domibus.dispatcher.priority.low.concurrency=**2-5**

#medium priority

domibus.dispatcher.priority.medium=Medium priority messages

domibus.dispatcher.priority.medium.service= service2

domibus.dispatcher.priority.medium.action= action2

domibus.dispatcher.priority.medium.value= 4

domibus.dispatcher.priority.medium.concurrency=**10-15**

#high priority

domibus.dispatcher.priority.medium=High priority messages

domibus.dispatcher.priority.medium.service= service3

domibus.dispatcher.priority.medium.action= action3

domibus.dispatcher.priority.high.value= 9

domibus.dispatcher.priority.medium.concurrency=**30-50**

#default priority for messages not matching any priority rule above

domibus.dispatcher.concurency=5-20

26. OPERATIONAL GUIDELINES

In this section you will find some recommendations on how to administer Domibus efficiently. The following topics are tackled: JMS Queue management, log management, capacity planning, database management and the monitoring of message life cycle.

26.1. JMS Queue Management

Domibus provides following out of the box features to manage the JMS Queues used in Domibus (see also §10.7- *"Queue Monitoring"*):

- Inspecting and filtering the messages from a queue based on the contents of Source, Period, JMS Type or Selector
- Move message from the DLQ (Dead Letter Queue) to the original Queue
- Delete stuck or pending message(s) from Queues

It is recommended to monitor the Queue size and number of messages in the different Queues. If some messages are stuck in any of the Queue then alerts must be sent to the Domibus Administrator.

Please pay special attention to the dead letter queue (DLQ). Messages stuck in this queue is a signal that there is some issue in Domibus that needs to be analysed and an alert should be sent to the Domibus Administrator.

Important:

The 'ListPendingMessages' operation on WS Plugin browses the JMS queue. Max count is limited to destination MaxBrowsePageSize which can be changed via the 'domibus.listPendingMessages.maxCount' Domibus property.

If received messages are not returned by the webservice listPendingMessages method, you should:

1. increase the value of the 'domibus.listPendingMessages.maxCount'property;
2. delete the messages from the domibus.notification.webservice queue with selector NOTIFICATION_TYPE=MESSAGE_SEND_SUCCESS using JMX tools : http://activemq.apache.org/how-can-i-monitor-activemq.html .

26.2. Log Management

26.2.1. Log Level

It is recommended that the log level is correctly set in all the environments:

- The log level should be set to INFO/DEBUG in all the test environments for de-bugging purpose.
- The log level should be set to ERROR/WARN in production environment (keeping log level to INFO in production environment will degrade the performance of Domibus).

26.2.2. Log Rotation and Archiving

It is recommended that log rotation and archiving logic is implemented.

Domibus provides by default log rotation, but Domibus administrator should manage Domibus archiving logic.

26.2.3. Log Monitoring

It is recommended to monitor continuously Domibus logs. It can be done using an automated script which looks for keywords like "ERROR", WARNING", etc. and reports all the errors and warnings to the Domibus administrator.

26.3. Capacity Planning

26.3.1. JVM Memory Management

Hereafter some recommendations:

- the JVM memory parameters must first be tested in a test environment with the load expected in production
- the JVM parameters i.e. heap size must be monitored with the help of automated scripts and any abnormal hikes in heap size must be reported to the administrator.

26.3.2. CPU, IO operations and Disk Space Monitoring

CPU, IO operations and disk space must be continuously monitored using automated scripts. Any abnormal hikes must be reported to Domibus administrator and further investigated.

26.4. Database Management

26.4.1. Database Monitoring

It is important to monitor the database size.

The Payload of the message is deleted from the sending Access Point. Only the metadata of the message stays in the table. The Payload from the receiving Access Point is deleted based on the retention policy defined in the Pmode settings.

Domibus uses approximately 40 MB of table space to store the metadata of 1000 messages.

26.4.2. Database Archiving

Since the Database contains AS4 receipts that are used for non-repudiation purposes, they should be archived before purging the database.

The metadata of the database can be purged if it is no longer required.

26.4.3. Monitor Message Life Cycle

It is recommended to monitor the message status in the TB_MessageLog table. Automated scripts can be used to count different status in the table.

Please pay special attention to the following statuses:

- WAITING_FOR_RETRY: this means that there is some issue between C2 and C3 that must be resolved.
- SEND_FAILURE: this means that that there is some issue between C2 and C3 that must be resolved.
- SEND_ENQUEUED: this message status is part of the successful message life cycle, however abnormal increase in the count of messages with this status means that there is an issue. Further investigation is recommended.

27. Annex 1 - Usage of certificates in PEPPOL and OASIS

		C2		C3	
		Keystore	**Truststore**	**Keystore**	**Truststore**
PEPPOL	Certificate:	Sender's (issued by CA)	Empty	Receiver's	CA's
	Note:	C2 signs the message with its private key	C2 discover C3's public certificate from the SMP	C3 signs the receipt with its private key	The receiver trusts all senders who's certificate were issue by these CA's
OASIS	Certificate:	Sender's (issued by CA)	SMP's	Receiver's	CA's
	Note:	C2 signs the message with its private key	C2 discover C3's public certificate from the SMP To trust the SMP, the sender needs its public certificate	C3 signs the receipt with its private key	The receiver trusts all senders who's certificate were issue by these CA's

28. List of Figures

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29. Contact Information

CEF Support Team

By email: CEF-EDELIVERY-SUPPORT@ec.europa.eu

SUPPORT Service: 8am to 6pm (Normal EC working Days)